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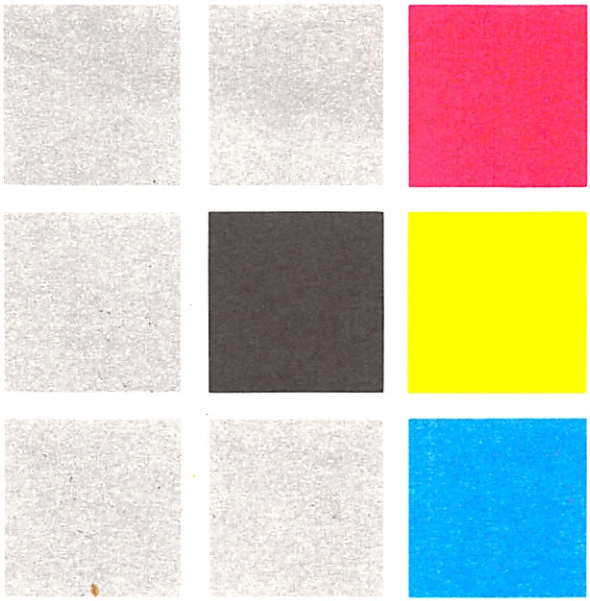

CROSFIELD

MAGNASCAN 6X6/SIRIUS SCANNER SERIES

Installation Manual

MAGNASCAN 6X6/SIRIUS SCANNER SERIES

Installation Manual
6500-9930-02A

IMPORTANT

Crosfield Electronics Limited has ensured, so far as is reasonably practicable, that the Company's products are so designed and constructed as to be safe and without risk to health when properly used, and when the safety precautions contained in this document are fully observed.

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WARNING

All precautions mentioned in this document must be strictly observed at all times. Personnel MUST therefore read the contents of the document BEFORE commencing any work on the equipment described in the document.

Improper use of controls and switches, failure to comply with warnings, and the performance of adjustments or procedures not specified in this document may expose personnel to danger.

PREFACE

This is the second re-issue of the Magnascan 6X6/Sirius Scanner Series Installation Manual.

This manual contains, so far as is possible, a comprehensive set of instructions and requirements for handling and unpacking the Magnascan 6X6/Sirius Scanner Series equipment, its installation and a basic functions check on the installed and connected system.

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ASSOCIATED DOCUMENTS

Magnascan 626/636/646 IE/M Operator's Manual 6500-8690

Magnascan 626/636/646 IE/M Operator's Reference Guide 6500-8700

Magnascan 6X6/Sirius Scanner Series Pre-Installation Manual 6500-9910

Magnascan Analyse Mechanical Service Module 4 6500-4340

Magnascan Analyse Optical Systems Service Module .. 6500-4350

Sirius 260 Workstation Pre-Installation Manual 6700-4000

Sirius 260 Workstation Installation Manual 6700-4010

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CHAPTER 1

SYSTEM CONFIGURATION

1.1 INTRODUCTION

Basic scanners comprise a single Analyse unit along with either one or more Expose Unit(s). The Expose Unit can be of two types: E (standard) and M (maxim), and up to four Expose Units may be driven from one Analyse Unit. The scanner unit types are illustrated in Figures 1.1 to 1.4, as used in Magnascan 6X6 and Sirius 260 series.

1.2 MAGNASCAN 6X6 RANGE

The 6X6 Scanner range is as follows:

1. 626 IE/M

These are colour scanners which are available with E (standard) or M (maxim) expose units, and are capable of producing up to two separations at a time using the electronic dot generation.

2. 636 IE/M

These are high productivity colour scanners which are available with E and M expose units which are capable of producing up to four separations at a time using electronic dot generation.

1.3 SIRIUS SCANNER 260 E/M

These Scanners are identical to 636 IE/M scanners and are configured with a Sirius Workstation. For Sirius Workstation Installation requirements refer to Sirius 260 Workstation Installation Manual, (see Associated Documents).

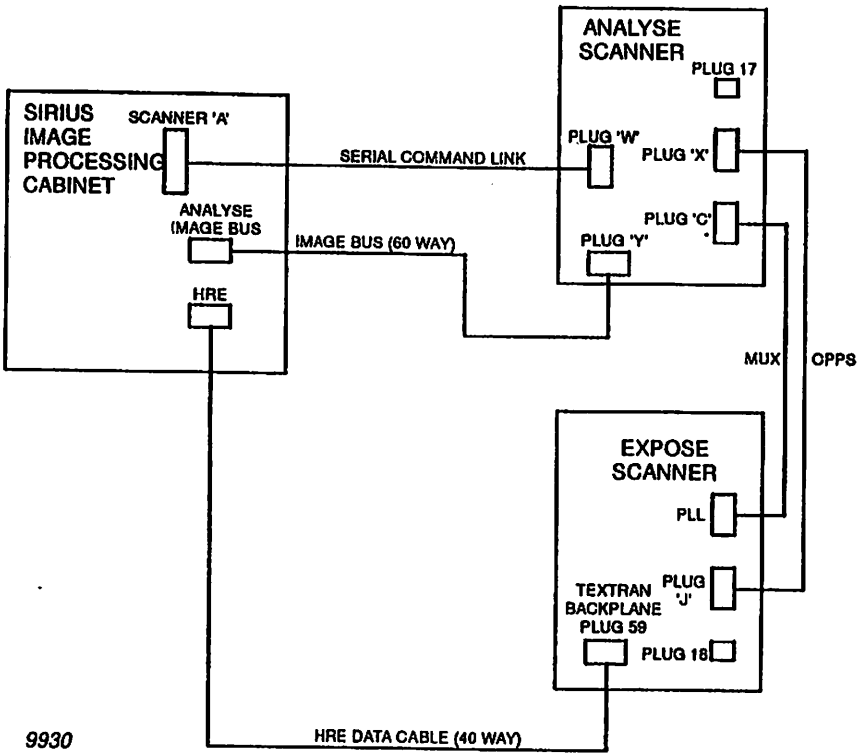

Figure 1.1 Sirius 260 Workstation and 6X6 Scanner Connections

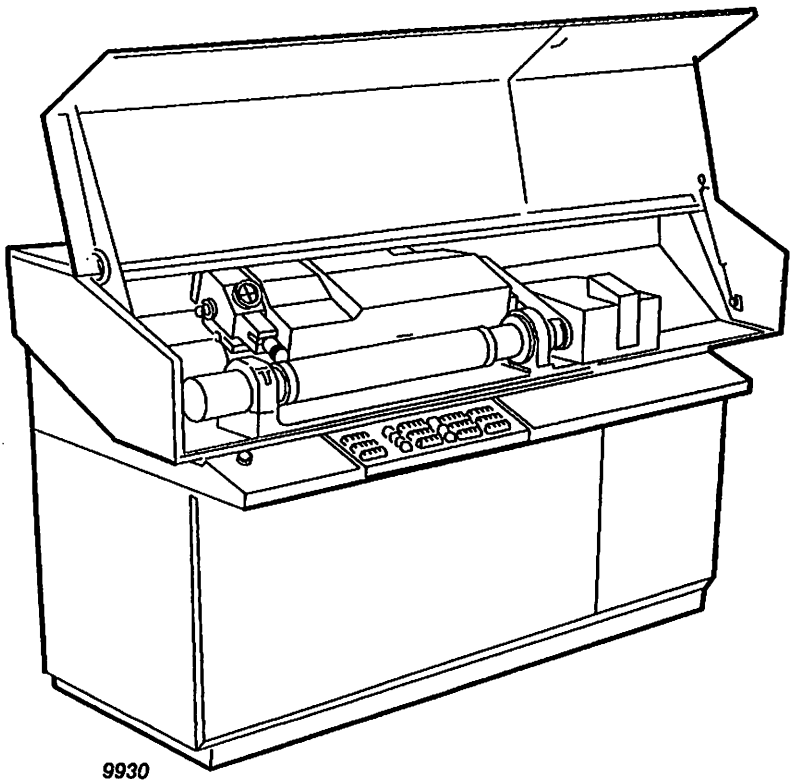

Figure 1.2 Magnascan 6X6/Sirius - Analyse Unit

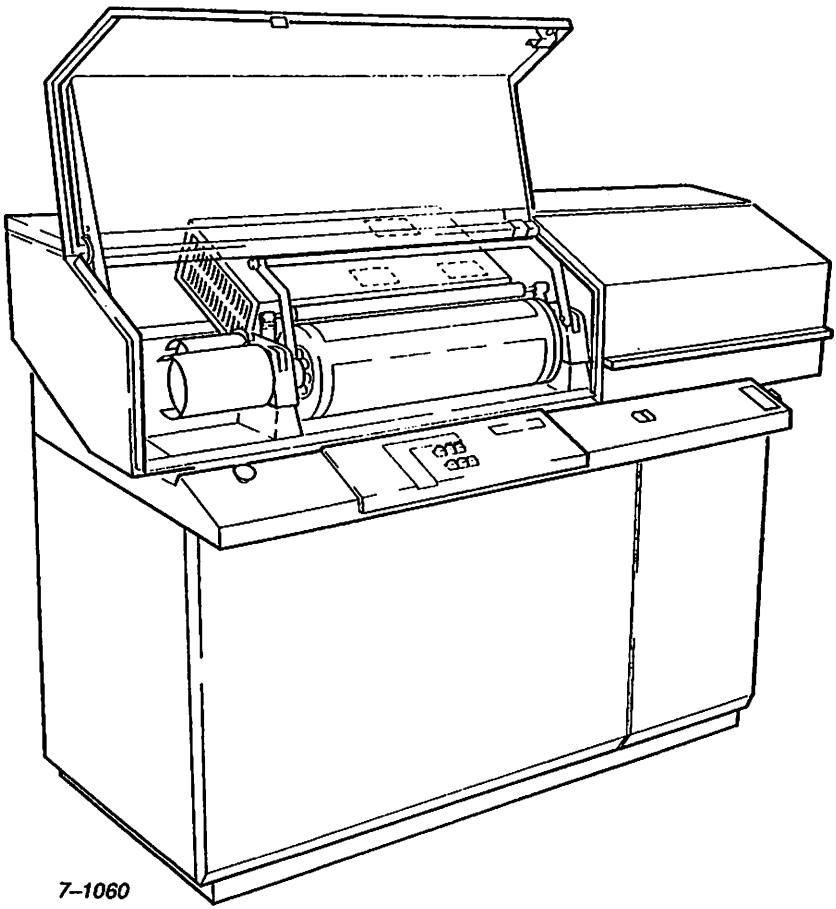

Figure 1.3 Magnascan 6X6/Sirius - Expose Unit (E-Type)

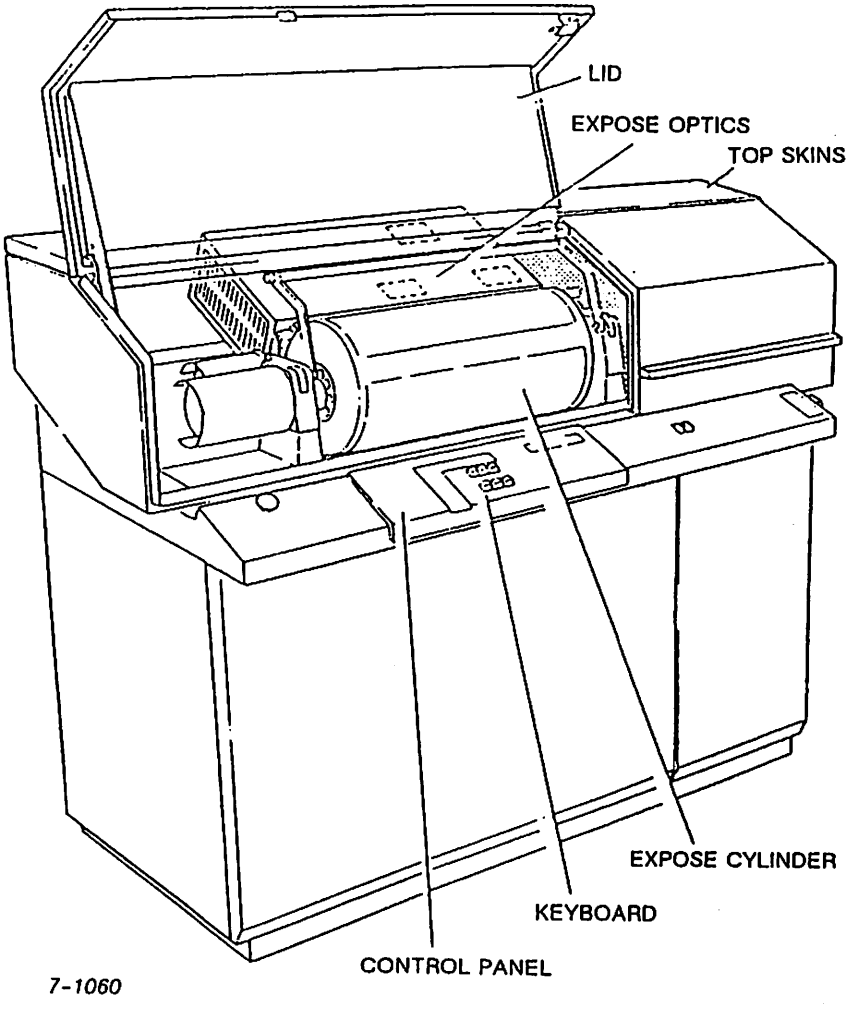

Figure 1.4 Magnascan 6X6/Sirius - Expose Unit (M-Type)

1.4 ANCILLARY EQUIPMENT

The following ancillary equipment is supplied:

- Vacuum pump
- Film loading table
- Film punch.

CHAPTER 2

SAFETY REQUIREMENTS

This chapter explains the safety conventions used in this manual and highlights safety practices specific to these equipments.

2.1 HEALTH AND SAFETY AT WORK

All personnel are advised to familiarize themselves with any local or national legislation relating to health and safety at work. Particular attention should be given to those sections covering personal responsibility regarding safe working practices which must be strictly observed at all times.

2.1.1 Warnings and Cautions

There are two safety categories, namely WARNINGS and CAUTIONS.

- WARNINGS are given for conditions which may endanger the safety of personnel.

WARNING

The instructions given in warnings must be followed precisely. They are given to avoid injury or death.

- CAUTIONS are given for conditions which may cause damage to equipment or materials.

CAUTION

The instructions given in cautions must be followed to avoid damage to equipment or materials.

2.2 CLOTHING AND JEWELLERY

Do not wear clothing or jewellery which could be hazardous when in contact with any part of the equipment, or which could reflect laser light into an eye.

2.3 EQUIPMENT AND TOOLS

Use tools and wear the protective clothing which are specified in the manual.

2.4 SITE SAFETY

2.4.1 Safety Devices

Make sure that all safety controls, such as

- brakes
- circuit breakers
- covers
- guards
- indicators
- interlocks
- warning labels

are present and functioning correctly before handing over the equipment to the customer.

Unless essential for commissioning or servicing, and under prescribed conditions, never override, negate or otherwise bypass safety controls such as:

- brakes
- circuit breakers
- covers

- guards
- indicators
- interlocks.

2.4.2 Unattended Equipment

Never leave equipment unattended, unless in a safe condition, with respect to:

- chemical
- electrical
- mechanical
- optical
- or other hazards.

2.5 ELECTRICAL SAFETY

The following basic precautions apply to the system, and also to the equipment with which the system is used:

- make sure that water and other liquids do not come into contact with the equipment.
- do not attempt to operate the equipment when flammable or volatile substances are present in the atmosphere.
- make sure that the correct type of fire extinguishers (BCF or CO_2) are present in the operating areas, and that they are regularly serviced.
- make sure that electrical servicing is only done by properly authorized personnel.

2.6 MECHANICAL SAFETY

The following basic precautions apply to the system, and also to the equipment with which the system is used:

- do not attempt to lift heavy equipment on your own. Obtain assistance from able-bodied persons or use suitable equipment as instructed in the manual.
- always close equipment doors and access panels to prevent anyone colliding with them.
- avoid leaving electrical cables trailing where anyone may trip over them.
- make sure that mechanical servicing is only done by properly authorized personnel.

WARNING

If both scanner lids are open and the left-hand lid is closed, the right-hand (pod) lid will close unaided, causing possible injury.

2.7 OPTICAL SAFETY

2.7.1 Laser

Note the following warnings:

WARNING

Never look directly into a laser beam.

WARNING

The voltages in the laser circuits and power supplies are lethal. Exercise extreme caution.

WARNING

Do not switch on the laser or attempt to do any alignment or adjustment to the optics unless you have been instructed on safe working with class 3b lasers.

Mandatory Signs

See Figures 2.1 and 2.2

When the laser is serviced, the expose unit must be operated with covers removed and safety interlocks overridden. Under these circumstances, only the Service Engineer should be in the expose unit area. All other personnel should be warned of the hazard by:

- a laser warning sign attached to the each door leading to the scanner room.
- a red warning light, positioned above the door(s) leading to the scanner room.

Local legislation may permit the following alternative:

- isolation of the scanner by means of a curtain. The curtain must be opaque to red light and must extend from the floor to a height of at least 2100 mm (82.7 in)
- warnings placed where required to ensure personnel are aware of the laser radiation hazard inside the curtained area.

Checks at Installation

At installation, check that:

- all safety or hazard warning labels are present
- closure of the metal shutter, at the output end of the laser, prevents laser emission
- disconnection of the remote control connector at the front panel of the power supply prevents laser operation
- the emission indicator on the front panel of the power supply is glowing when the laser is operating

- the removal of the key from the key-switch on the front panel of the power supply prevents laser operation.

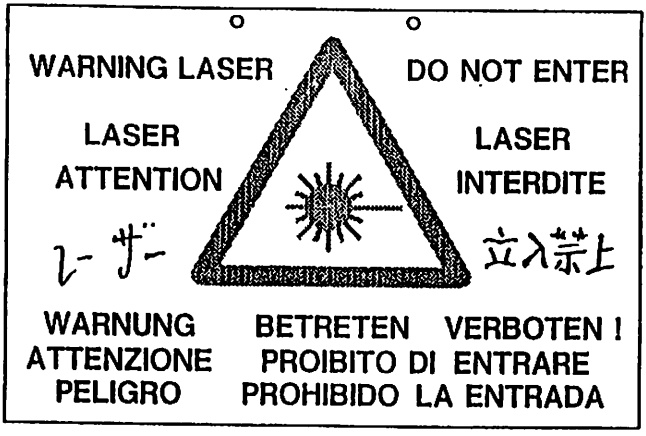

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Figure 2.1 Laser Warinig Sign

General Precautions

- always close the laser shutter before inserting or removing any optical component or sub-assembly
- do not power-up the power supply unless a laser head is connected
- never have the laser brighter than the laser needs to be to do any particular alignment task
- never place a mirror in the laser beam. This action can reflect hazardous light to others working in the general area
- remove the protective cover of the laser only in accordance with the instructions given in the service manual
- the alignment requires that the diffused reflected spots from screens and targets are examined. These diffused reflections are not hazardous and Crosfield Electronics *do not recommend* that the engineer wears attenuating goggles (laser safety goggles). When attenuating goggles are worn, the laser beam has to be so bright the beam becomes a hazard to personnel in the area not

wearing attenuating goggles

- the protective cover of the laser is always to be in place during normal operation
- unless the specification requires otherwise, adjust the beam intensity by altering the tube current so that the beam is just bright enough to do the required adjustment. Always start with the intensity at minimum and increase to the point where the spot is adequately visible.

2.7.2 Xenon Lamp

Note the following warnings:

WARNING

Wear a protective headguard, complete with visor, and gauntlets when handling the Xenon lamp or whenever the lamp is exposed. Use the plastic safety cylinder around the lamp when fitting the lamp into the lamphouse.

WARNING

The xenon lamp may burst whilst in use.

2.8 CHEMICAL SAFETY

The following guidelines must be followed when storing or handling highly flammable liquids.

- Store bulk supplies in a metal cabinet marked with a 'flammable liquid' label of an approved design.
- For use in the work area, decant the liquid to a container with a maximum capacity of 250 cc. The use of a safety dispenser is recommended.
- Do not use the liquid near to non-flameproofed electrical equipment.
- Do not use the liquid near to a naked flame. DO NOT SMOKE.

2.9 SAFETY LABELS

Safety labels are fitted to the equipment to warn you of potential hazards. These labels must not be defaced or removed.

Safety labels which can be seen when the equipment is installed and operational are listed in the following sections.

2.9.1 Analyse Unit

A label warning that the right-hand cover must be closed before an exposure is started is fitted under the right-hand cover.

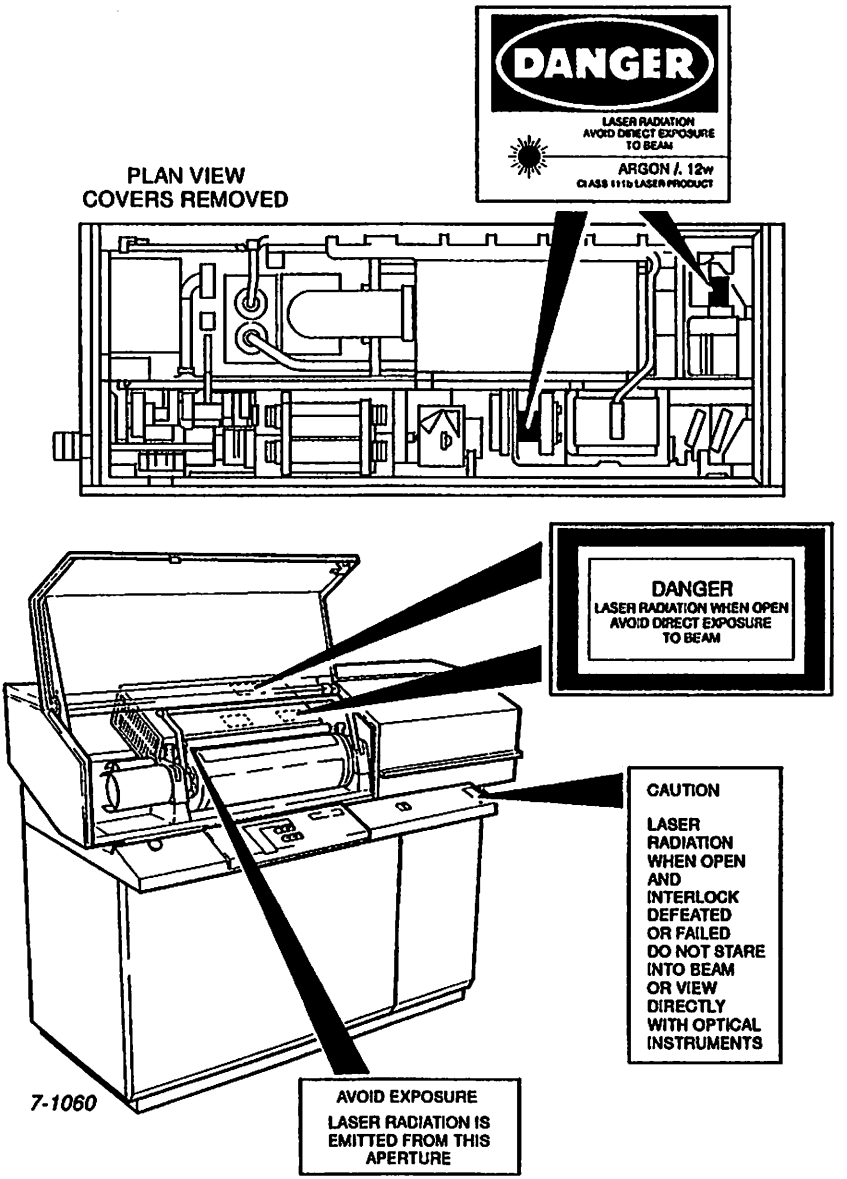


Figure 2.2 Position of Laser Warning Labels

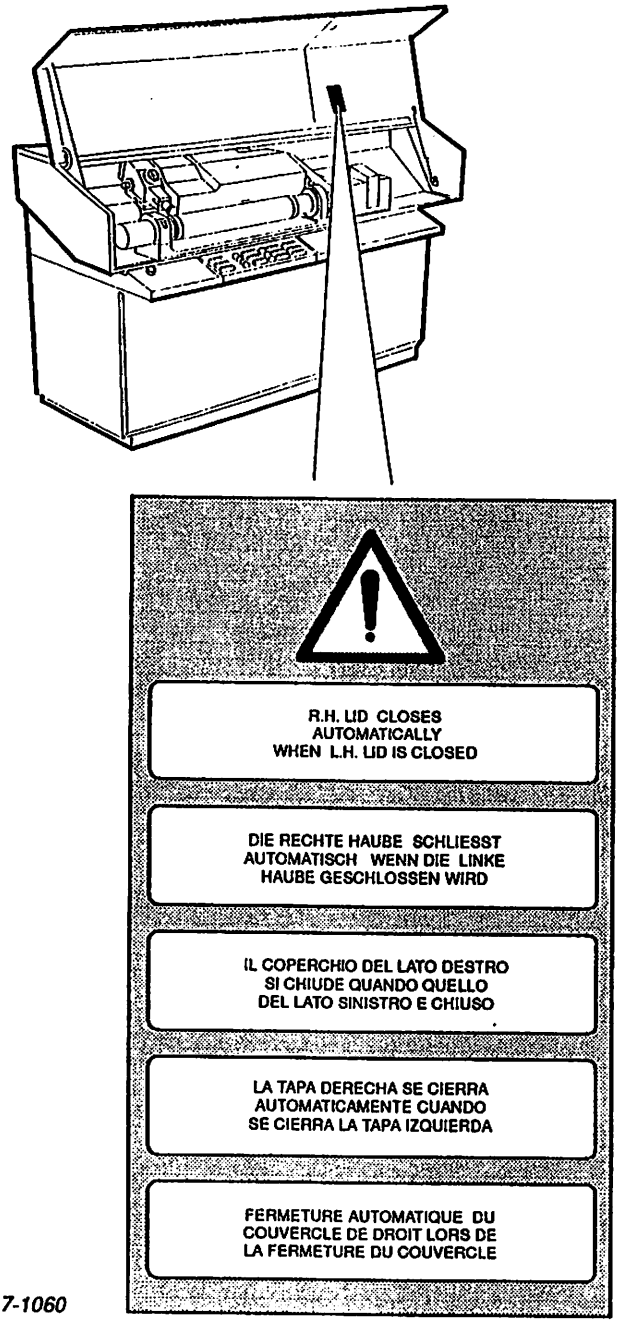
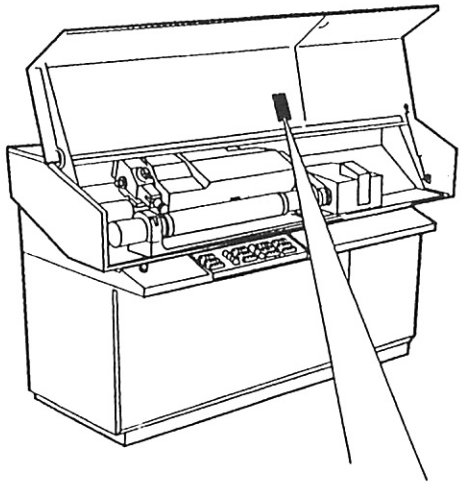


Figure 2.3 Safety Label on Analyse Unit Right-hand Lid



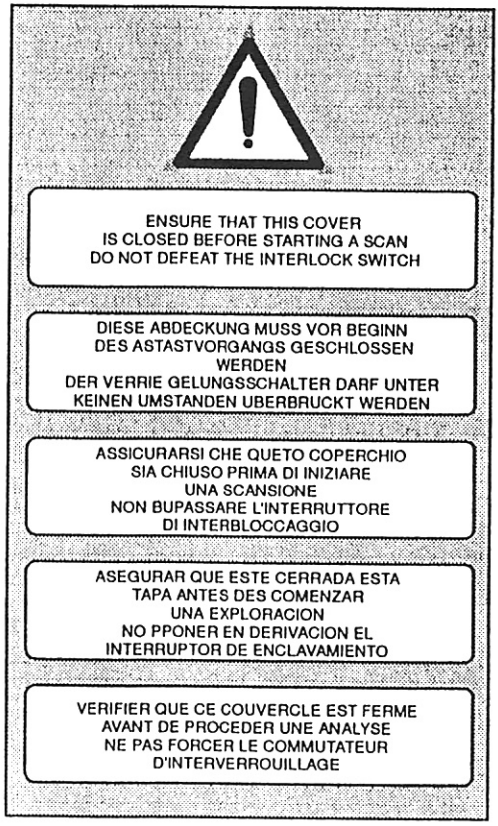


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Figure 2.4 Safety Label on Analyse Unit Left-hand Lid

CHAPTER 3

UNPACKING AND HANDLING

3.1 PACKAGING

See Figure 3.1

Each major item of equipment is packed in a particular soft packaging case. Each case comprises a purpose-made enclosure of heavy duty corrugated cardboard suitably equipped with foam rubber and/or foamed polyurethane inserts for shock absorption.

Where necessary, individual cases are mounted on suitable wooden pallet bases for fork-lift truck handling. Each soft packaged case is then either individually or collectively housed in a pallet-based wooden framed crate.

If the customer, or customer's representative is to do the unpacking, a Crosfield Electronics Customer Support Engineer or other Crosfield Electronics Representative must be present at the time of unpacking.

3.1.1 Consignment Check

Before any of the consignment is unpacked, examine the delivery by reference to the Consignment Note. The Consignment Note is located in a plastic bag attached to each packing crate.
The item description column of the Consignment Note specifies all of the equipment that is packed at the factory for this particular consignment. Items are individually examined at a later stage.

3.1.2 Inspection of Crates

Upon receipt of the crated Magnascan 6X6 equipment at the Customer's site and/or, the point of arrival, examine the packing crates for signs of damage or mishandling, including:

- visible signs of infestation by insects, rodents or fungal growth

- transit monitoring devices, (see Figure 3.1)
  -blue litmus paper indicator
  -DROP-N-TELL indicator
  -TIP-N-TELL indicator.

If, upon inspection, signs of damage, mishandling or contamination are observed, the following steps must be taken:

1. Record the details of the crate in question on the Crosfield Electronics Installation Summary Sheet and in the shipping/delivery documents.
2. Notify the shipping agent and/or, the insurance agent that damage, mishandling or contamination of the crate(s) is detected and obtain their authorization to open the affected crate(s).

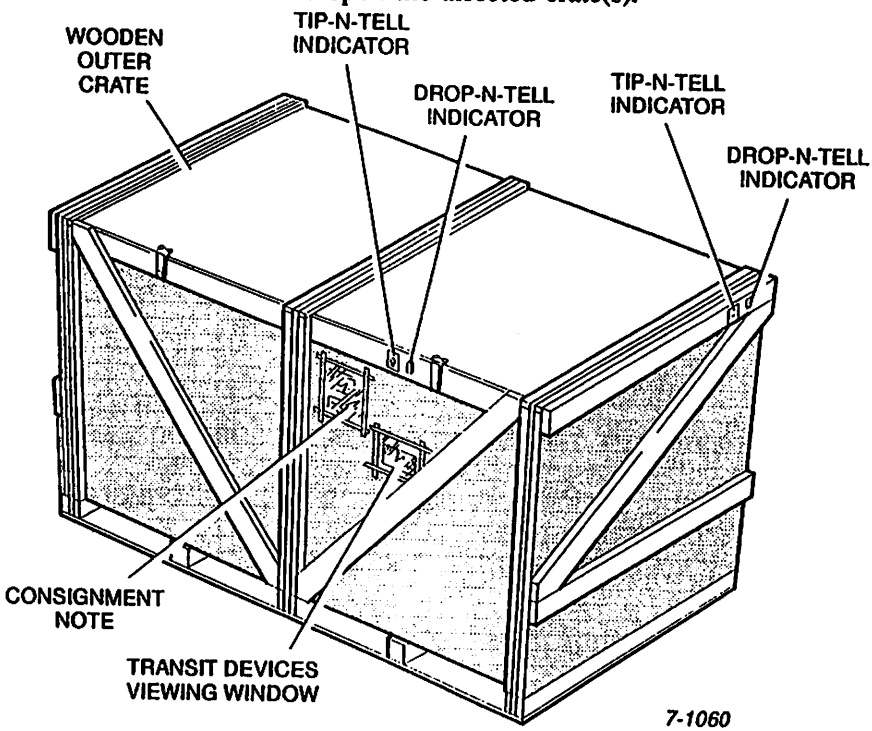


Figure 3.1 Magnascan 6X6 Scanner Crates

Whenever unpacking is to be carried out, it shall be in accordance with the relevant Crosfield Electronics procedure.

CAUTION

When transported to the site, the equipment must remain sealed in the packing crates for sufficient time to enable the equipment to reach local ambient temperature. In this context, the recommended minimum acclimatization period is 48 hours. If insufficient time is given for acclimatization, the unpacked contents may be subject to condensation, which in turn may lead to corrosion.

3.1.3 Unpacking

See Figure 3.1

CAUTION

Transit fixings must not be removed until a unit is in the final operating position.

Lifting beam and tackle, if supplied by Crosfield Electronics, are supplied for the installation of the equipment only. Crosfield Electronics recommend that the beam and tackle are disposed of when the equipment is installed. If kept, this equipment may be subject to legal requirements of maintenance and inspection by a responsible person at stipulated intervals of time.

Note: Crosfield Electronics do not accept any responsibility for this equipment except during installation.

Analyse and Expose scanners

The following steps describe the method for unpacking the Analyse and Expose scanners.

1. Remove the unpacking instructions from the crate.
2. Cut, and remove, the banding from around the outside of the crate.

3. Unclasp the four quick-release fastenings and remove the top cardboard cover.

4. Remove the internal top brace.

5. Remove the restraining batten secured across the crate.

7. Remove the screws that secure the left-hand and right-hand sides to the front of the crate.

6. Remove the front and side covers (these items require prising away from the restraining nails).

8. Retain all packaging.

The scanner is on a plinth base and accessible.

Ancillary Items (Scanner)

1. Remove the unpacking instructions from the crate.

2. Unpack all ancillary items in accordance with the unpacking instructions, allowing for **acclimatization period** if applicable.

3. Retain all packaging.

Acclimatization Period

At this stage, a 48 hour period of acclimatization for each unit is necessary to enable the units to reach the operating ambient temperature. Providing the temperature of the unpacking area is similar to the temperature in the installation area, the acclimatization can take place wholly (or in part) in the unpacking area.

The beginning and end of the 48 hour period is to be noted by the installation engineer.

Units should not be removed from their plastic (vapour barrier) covers until the completion of the **acclimatization period.**

3.1.4 Preliminary Inspection of Equipment

Examine Contents with the Consignment Note(s)

All Magnascan 6X6 units and ancillary items shall be examined on completion of unpacking. The examination is to be done by comparing the Equipment Log Book(s) and the Consignment Note(s).

Examine Equipment

Examine all units and items for signs of damage, mishandling and contamination as detailed in Section 3.1.2, as applicable. Record the details for the defective unit(s)/item(s) on the Crosfield Electronics Installation Summary Sheet and in the shipping/delivery documents.

3.1.5 Repacking

CAUTION

A failed or damaged item of equipment must be correctly packed in the original case. Failure to comply with this instruction may cause damage to the equipment during transit to Crosfield Electronics' factory (damage of this type is rectified by Crosfield Electronics at the Customer's own expense regardless of warranty conditions).

Items of equipment which are to be returned to Crosfield Electronics must be:

- Re-packed correctly in the original packaging
- Correctly labelled
- Fitted with their internal and external Transit Fixings, as applicable.

3.2 HANDLING

See Figure 3.2.

CAUTION

When lifting a Magnascan 6X6 scanner with a fork-lift truck or equivalent, make sure that the unit rests on the plinth. Make sure that the forks are in the designated slots of the plinth.

3.2.1 Moving

For the purposes of this manual, the movement of the Magnascan 6X6 equipment is classified as:

- lifting and transporting the Magnascan 6X6 equipment on the customer's site
- manoeuvring the Magnascan 6X6 equipment in the installation area.

CAUTION

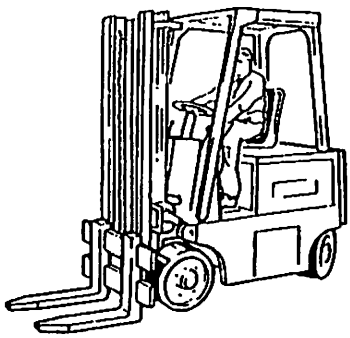
The equipment is not to be subjected to shock or vibration during movement.

The recommended method for lifting and transporting equipment through the Customer's site is by fork-lift truck.

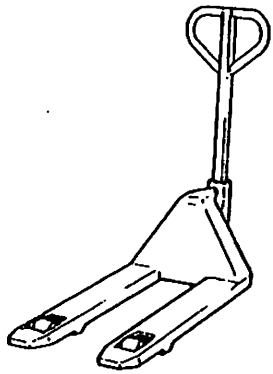
Three methods of moving the scanner units are described here. Use the method appropriate to the Customer's site (method A is preferred to method B where both alternatives are available).

Method A

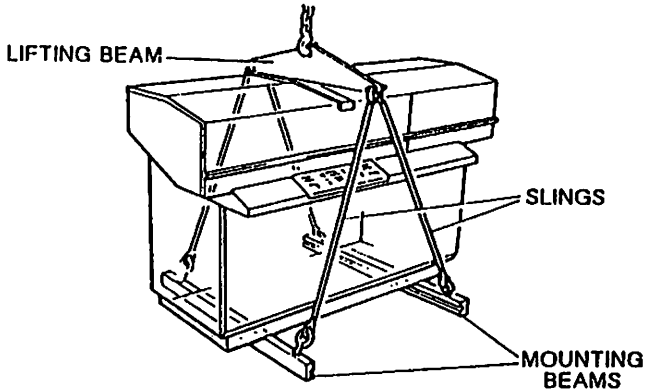
1. Locate a fork-lift truck in the slots of the plinth.
2. Lift the scanner clear of the plinth and, if practicable, transport the scanner to the installation area.



(a) FORK-LIFT TRUCK



(b) PALLET TRUCK



7-1060 (c) LIFTING BEAM AND TACKLE FITTED TO SCANNER

Figure 3.2 Trucking and Lifting Beam Equipment

3. Lower the scanner to the ground (so that the scanner castors support the scanner).

4. Remove the fork-lift truck.

Method B

1. Use a fork-lift truck and lift the scanner clear of the plinth.

2. Lower the scanner onto two evenly spaced blocks (so that a pallet truck may be inserted under the scanner).

3. Remove the fork-lift truck and plinth.

4. Locate a pallet truck under the frame of the scanner and transport the scanner to its final destination within the installation area.

5. Lower the scanner onto two evenly spaced blocks (so that the pallet truck may be removed from under the scanner).

6. Remove the two evenly spaced blocks.

A fork-lift truck or lifting beam and tackle may be used to lower the scanner on to its castors.

If a lifting beam and tackle is used:

1. Attach the two mounting beams to the underside of the scanner frame.

2. Fasten the slings (attached to the lifting beam) to each mounting beam.

3. Attach a crane (or equivalent) to the lifting beam and raise the scanner so that the crane (or equivalent) is supporting the scanner.

4. Remove the blocks.

5. Lower the scanner onto its castors.

6. Remove the lifting beam and tackle.

Method C

1. Use a fork-lift truck and lift the scanner clear of the plinth.
2. Attach the two mounting beams to the underside of the scanner frame.
3. Lower the scanner on to its castors.
4. Remove the fork-lift truck.
5. Fasten the slings (attached to the lifting beam) to each mounting beam.
6. Attach a crane (or equivalent) to the lifting beam and raise the scanner so that the crane (or equivalent) is supporting the scanner.
7. Transport the scanner to the installation area.
8. Lower the scanner on to its castors.
9. Remove the lifting beam and tackle.

Note: This method is particularly useful when used to lift a scanner through an access door (or window) in the side of a building.

3.2.2 Positioning

The equipment is to be positioned in accordance with the limits given in the Magnascan 6X6/Sirius Scanner Series Pre-installation Manual, (see Associated Documents).

Manoeuvre the scanners on their castors when in the installation area.

3.3 COVERS

3.3.1 Removal of Covers

Scanners

1. Make sure the 48 hour acclimatization period is complete.
2. Remove the lower cover.

3. Remove the upper cover.
4. Remove all padding and protective sheeting.
5. Remove packaging from the installation area.

3.3.2 Final Inspection of Equipment

Scanners

See Figure 3.3.

1. Inspect the skin panels for signs of damage.
2. Remove the lower skin panels and the rear top cover and inspect the scanner frame handling indicators.
3. If a unit or item is damaged, and the damage was undetected during the **Preliminary Inspection of Equipment** procedure, repeat the checks detailed in the Section 3.1.2, as applicable.

Ancillary Items

Examine all units and items. If a unit or item is damaged, and the damage was undetected during the **Preliminary Inspection of Equipment** procedure, repeat the checks detailed in Section 3.1.2, as applicable.

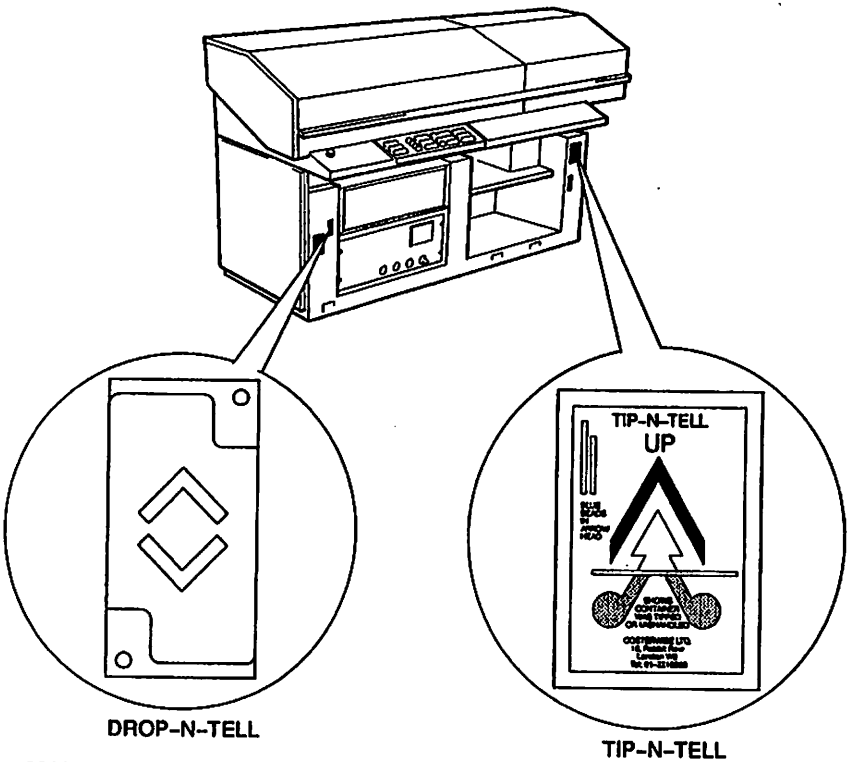


Figure 3.3 Scanner-frame Handling Indicators

CHAPTER 4

INSTALLATION PROCEDURE

4.1 REMOVAL OF TRANSIT FIXINGS

Note: All scanner transit fixings are coloured red.

4.1.1 Removal of Analyse Unit Transit Fixings

See Figures 4.1 to 4.3

CAUTION

Do not remove transit fixings until the unit is in the operating position.

Do not power-up equipment unless all transit fixings are removed.

Make sure the scanner room area is:

- clean
- dust-free
- cleared of all packaging materials.

To remove the analyse unit transit fixings, proceed as follows:

1. Remove all tape and wrapping.
2. Remove all bags of desiccant.
3. Disconnect earth links for the upper, rear, skins from inside the scanner.
4. Remove the upper, rear, skins and the lower front and rear panels: remove the earth links as they become accessible.

5. Remove the bolt securing the Colour Separation Unit, (see Figure 4.1).

6. Remove the two screws securing the main power supply chassis (at the rear of the scanner) and swing out the Power Supply Unit (PSU).

7. Remove the two diagonally-positioned transit blocks securing the main PSU chassis fan, (see Figure 4.1).

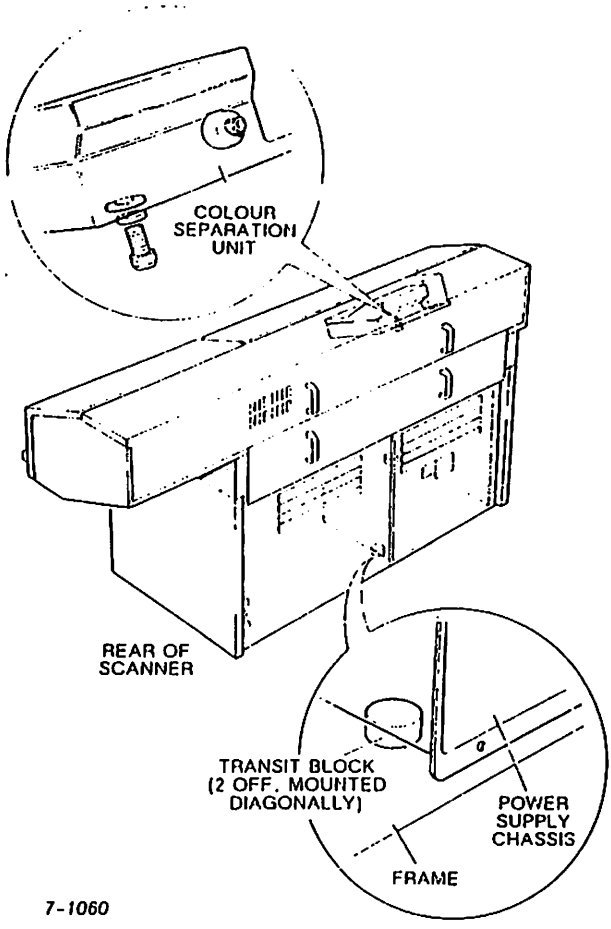


Figure 4.1 Analyse Unit - Transit Fixings for the Main Power Supply Chassis and Colour Separation Unit

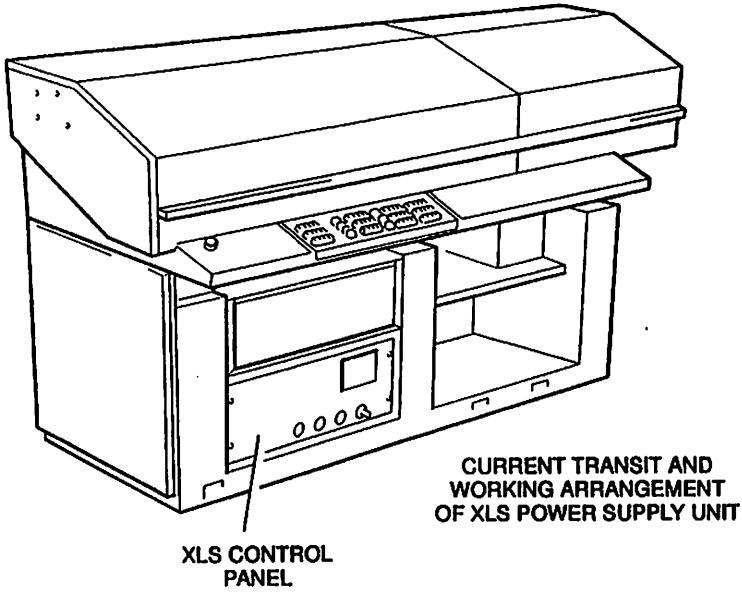


Figure 4.2 Analyse Unit -Transit Fixings for XLS PSU

Note: On all new analyse unit manufactured from July 1991 the XLS PSU is fitted behind the XLS Control Panel. Units shipped between January 1989 to July 1991 are manufactured with the XLS PSU in the Left-hand side of the Unit.

8. Remove the bolt securing the carriage to the main beam, (see Figure 4.3). Remove the packing strip under the roller bearing.

9. Remove the bolt securing the main beam to the cabinet frame. Remove the packing spacers.

10. Replace the lower, front and rear panels and upper, rear, skins: reconnect all earth links in the process.

CAUTION

Every skin panel must be connected to frame 0V for the scanner to meet RFI protection requirements.

11. Clean surrounding metal surfaces with methylated spirit. Refer to the Safety Chapter for guidelines on handling highly inflammable liquids.

4.1.2 Removal of Expose Unit Transit Fixings

See Figures 4.3 to 4.6

WARNING

Follow safety requirements for lasers. Refer to the Safety Requirements chapter.

CAUTION

Do not remove transit fixings until the unit is in the operating position.

Do not power-up equipment unless all transit fixings are removed.

Make sure the scanner room area is:

- clean
- dust-free
- cleared of all packaging materials.

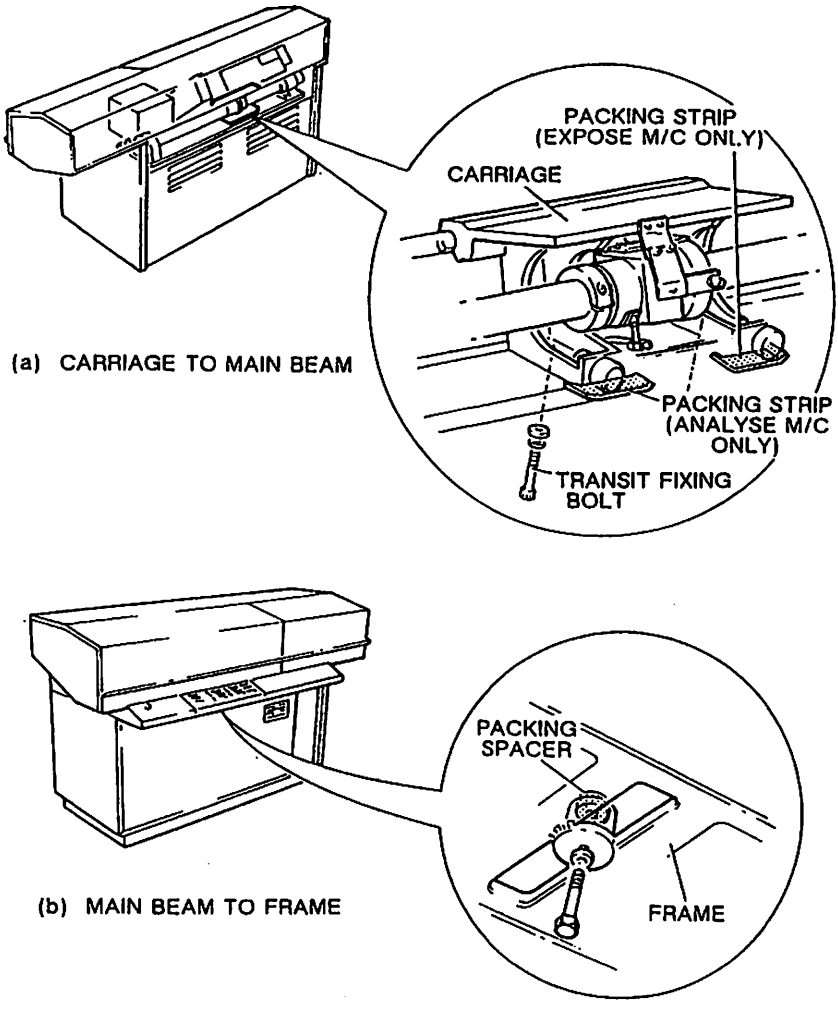


Figure 4.3 Analyse or Expose Unit - Transit Fixings for Scanner Carriages and Beam

To remove the expose unit transit fixings, proceed as follows:

1. Operate the manual override switch, accessible beneath the operator panel, and open the unit lid, (see Figure 4.4).
2. Remove all tape and wrapping.

3. Remove all bags of desiccant.

4. Disconnect earth links for the upper, rear, skins from inside the scanner.

5. Remove the upper, rear, skins and the lower front and rear panels: remove the earth links as they become accessible.

6. Remove the four corner transit fixings securing the transformer mounting tray and the two centre transit fixings, (see Figure 4.5).

7. Remove the two diagonally-spaced brackets securing the laser support PSU tray, (see Figure 4.5).

8. Remove the two nuts securing the card rack fans, (see Figure 4.5).

9. Remove the two bolts and spacers holding the laser cooling fan, (see Figure 4.6).

10. Remove the two screws securing the main power supply chassis and swing out the PSU.

11. Remove the two transit blocks securing the main PSU chassis fan.

12. Remove the bolt securing the carriage to the main beam, (see Figure 4.3). Remove the packing strip under the roller bearing.

13. Remove the bolt securing the main beam to the cabinet frame. Remove the packing spacers.

CAUTION

Make sure that there is sufficient oil on the leadscrew.

14. Replace the lower, front and rear panels and upper, rear, skins: reconnect all ground links in the process.

CAUTION

Every skin panel must be connected to frame 0V for the scanner to meet RFI protection requirements.

15. Clean surrounding metal surfaces with methylated spirit.

16. Replace the lower, rear, panels and upper, rear, skins.

CAUTION

Every skin panel must be connected to frame 0V for the scanner to meet RFI protection requirements.

17. Connect all earth links.
18. Clean surrounding metal surfaces with methylated spirit.

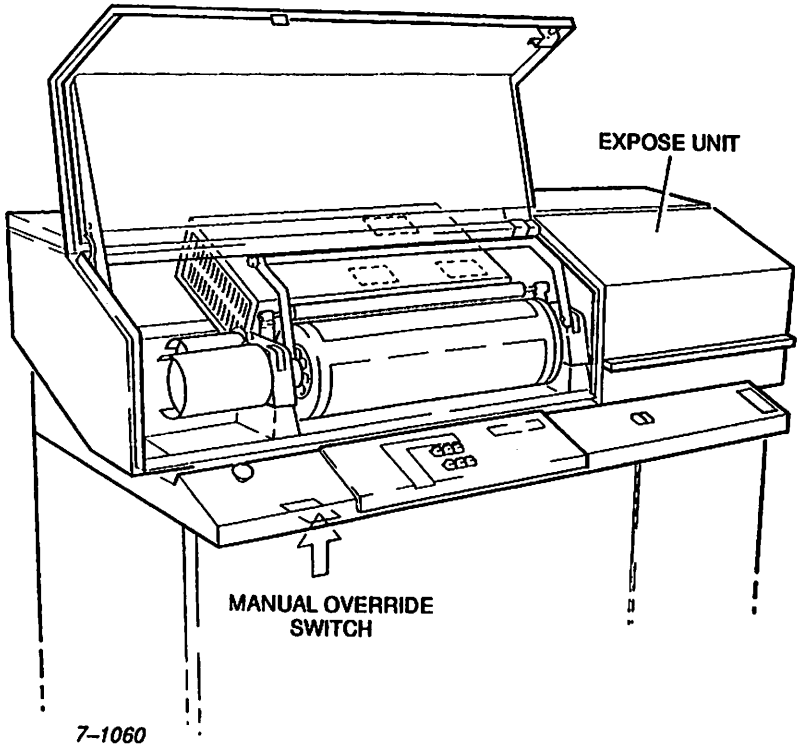


Figure 4.4 Manual Override Switch Location

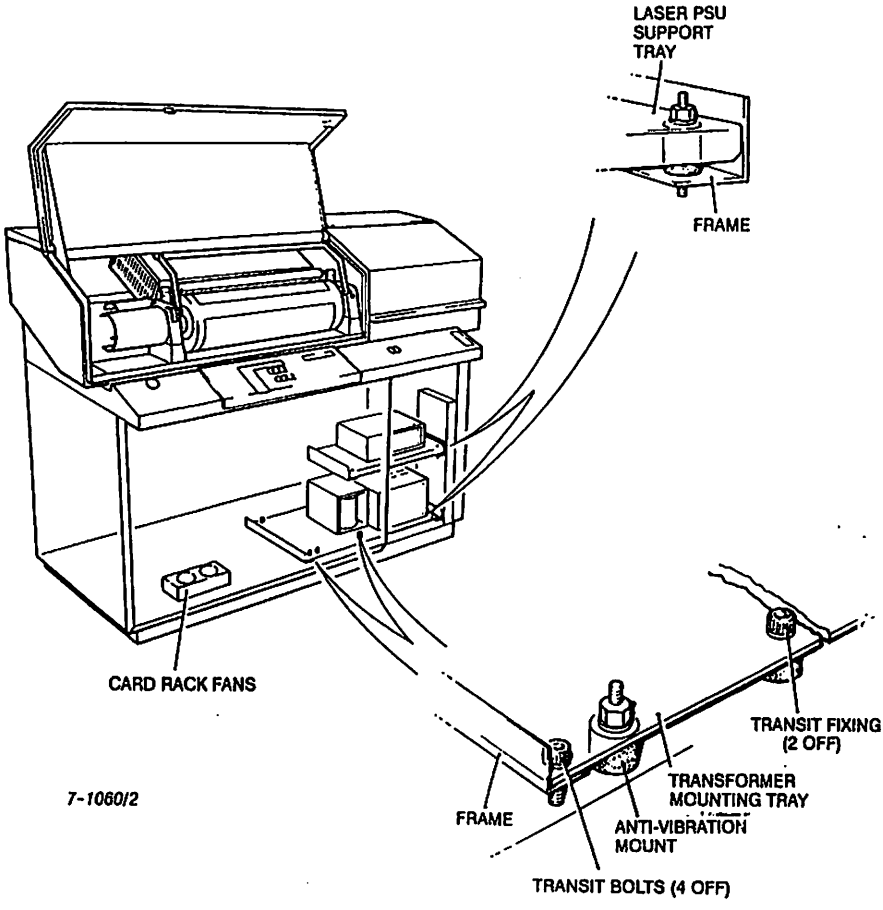


Figure 4.5 Expose Unit Transit Fixings for Support Trays and Card Rack Fan

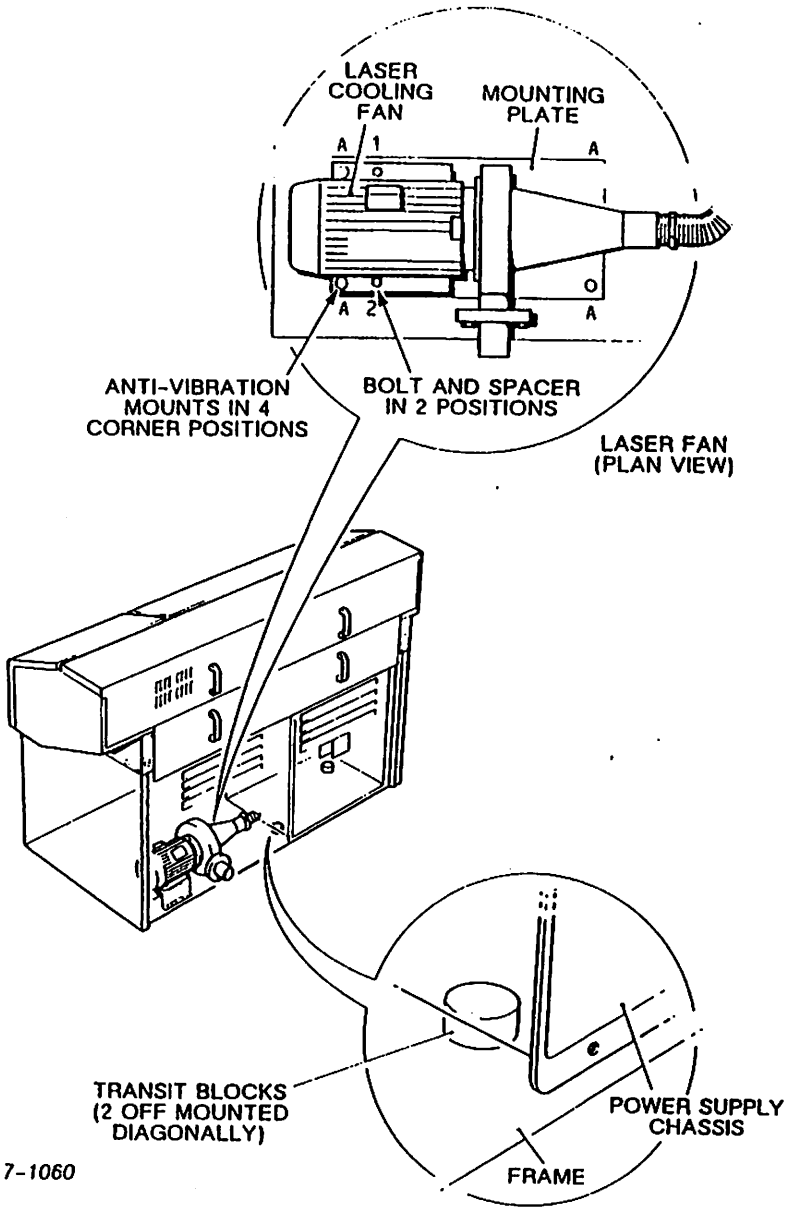


Figure 4.6 Expose Unit Transit Fixings for Main Power Supply Chassis and Laser Fan

4.2 INSTALLATION OF ANTI-VIBRATION MOUNTS

See Figure 4.7.

Where a Customer's site is subject to vibration, scanners should be mounted on anti-vibration (AV) mounts (7509-8650).

CAUTION

The anti-vibration mounts (7509-8650) must not be used when the floor vibration is less than 9 Hz.

1. Slide an AV mount under each transit beam mounting point.
2. Adjust the height of each spigot so that it engages the scanner frame.
3. Apply the jacking nut(s) so that the respective castor(s) is raised clear of the floor (nominal clearance 1 mm, maximum clearance 6 mm).
4. Using a calibrated spirit level adjust the appropriate AV mounts' jacking nuts until the scanner is level.
5. Tighten the lock nut on each AV mount.

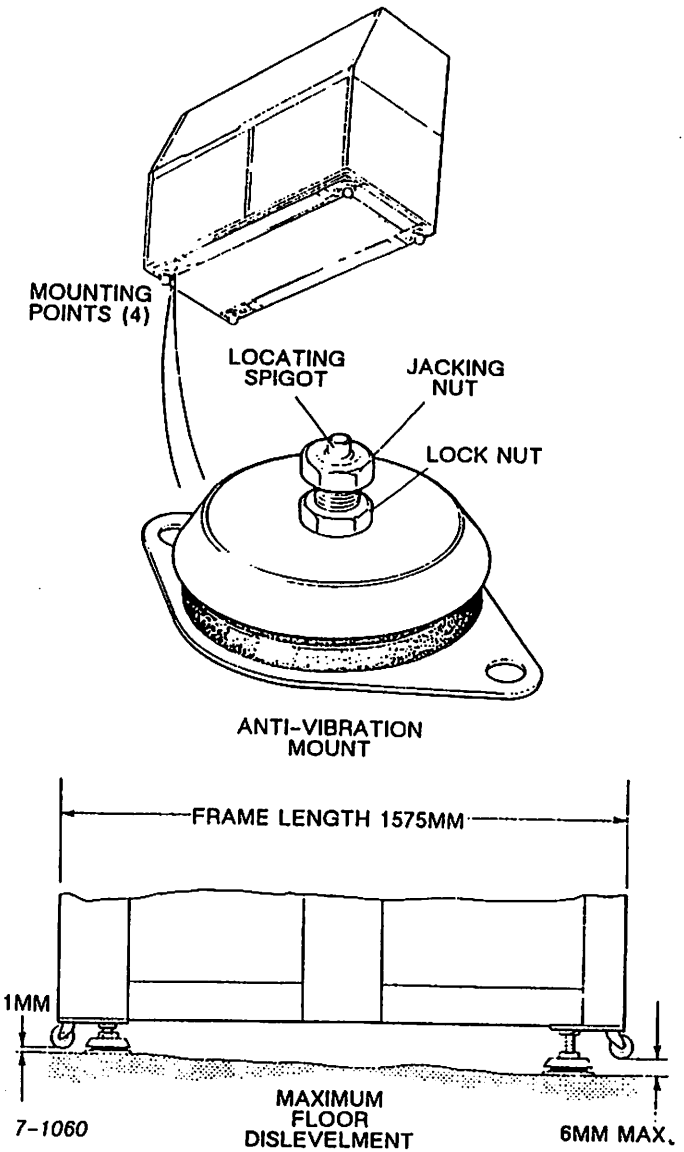


Figure 4.7 Adjustable Anti-vibration Mounting

4.3 ELECTRICAL INSTALLATION

4.3.1 Connections External to Analyse and Expose Units

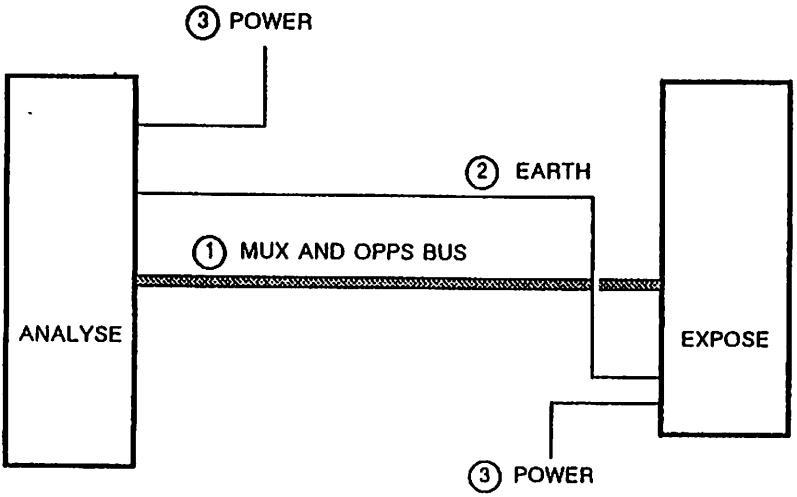
The following procedure describes the installation of cables external to the analyse and expose units.

1. Pass the inter-unit (signal) cables through the screening under the scanner.
2. Secure the cables in the cable clamp and check that the screening conductivity to earth is present.

The external cables are detailed in Table 4.1 and are illustrated in Figures 4.8, 4.9, and 4.10.

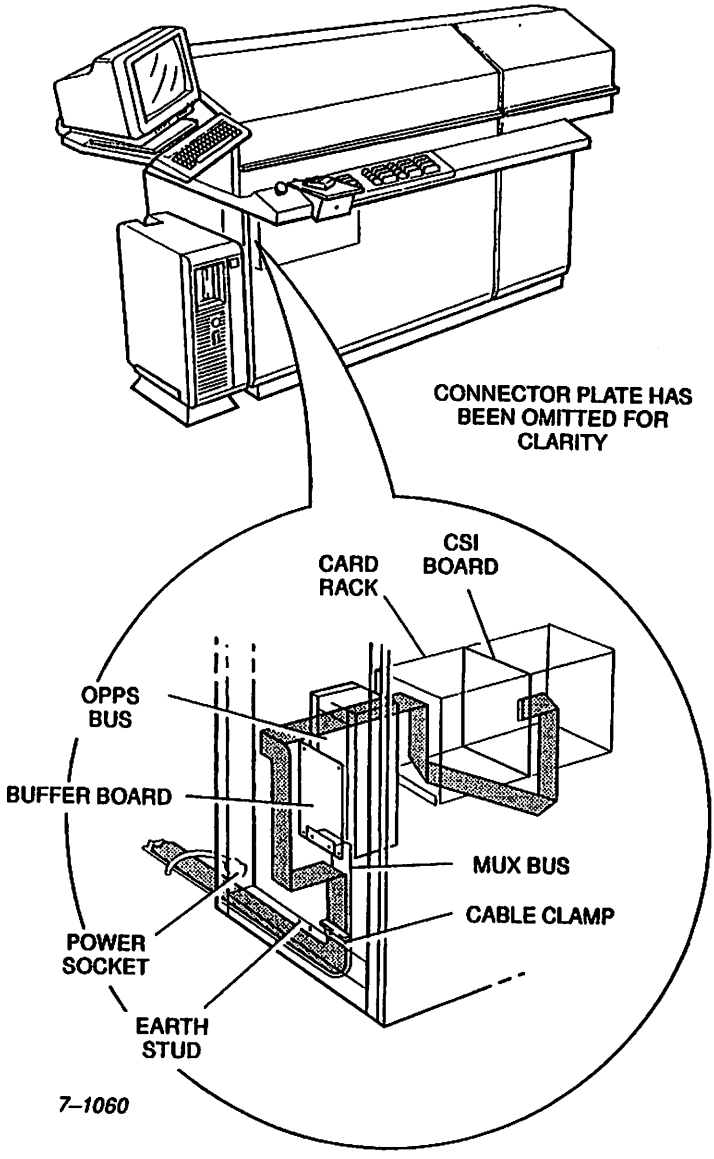
Table 4.1 Basic Scanners, Dual Units

Cable Ref No	Part No	Description
1	7503-1530	RFI combined MUX bus and OPPS bus
2	7502-9860	Earth
3	7503-1560	Power



7-1060 Note: See Table 4.1

Figure 4.8 Basic Scanner, Dual Units Cables



Note: Connections are shown for Analyse Unit. Bus connectors are made similarly on Expose Unit but are taken to the Backplane.

The OPPS bus cable may be routed over the CARD RACK for connection to the CSI board in the Analyse Unit.

Figure 4.9 External Cabling to Analyse Unit

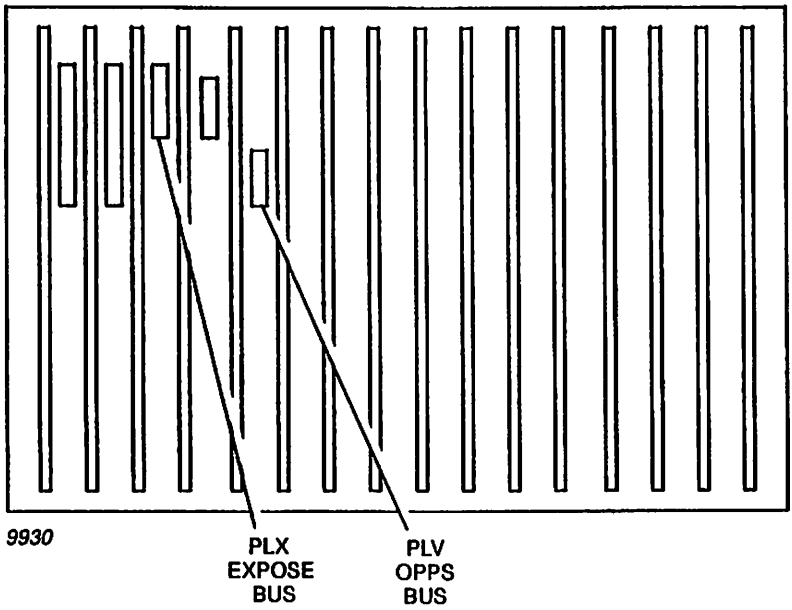


Figure 4.10 Scanner Card Cage Rear View

Note: MUX and OPPS Bus cables are combined in a single sleeve, differentiated in colour (Yellow or Brown).

Analyse Unit

1. Connect the MUX bus cable to the Buffer Board (connector CC1).
2. For Magnascan 626/636 the OPPS Bus cable connect to the PLV socket on the backplane. For the Sirius 260 the OPPS Bus cable connects to the PLX socket on the backplane.

Expose Unit

1. Connect the MUX cable to the PLC socket on the standalone backplane.
2. Connect the OPPS Bus cable to the PLV socket on the standalone backplane.

4.3.2 Cabling Checks

1. Check security of point-to-point cabling connections.

CAUTION

Make sure the sockets of all the internal ribbon cables are pushed firmly home.

2. Check connection of earth straps.

4.3.3 Earth Continuity Check

WARNING

Do not proceed until the following check has been successfully completed.

Make sure that the resistance between the star-point on the rear of the scanner and a suitable area of bare metal on the monitor support plinth does not exceed 0.5 ohm. Also make sure that the resistance between the star-point and the earth stud on the connector plate does not exceed 0.5 ohm.

4.3.4 Mains Supplies

Mains supplies and power-line connections shall be as defined in Magnascan 6X6/Sirius Scanner Series Pre-Installation Manual, (see Associated Documents).

CAUTION

Ensure the AC supplies to the scanners are in phase with each other. To do this, connect a voltmeter between both outlet line terminals. If the outlets are in phase, a zero reading is obtained.

Connect the power cables to the rear of the analyse and expose units.

4.3.5 Panel Re-fitting

Re-fit the left-hand lower end panel and left-hand front panel of the analyse unit.

4.4 ANCILLARY EQUIPMENT INSTALLATION

This section describes the installation procedures necessary to install ancillary equipment.

4.4.1 Vacuum Pump

See Figures 4.11 and 4.12

Ensure the scanner room area is:

- clean
- dust-free
- cleared of all packaging materials.

CAUTION

The vacuum pump becomes hot, up to 100°C, during operation. Make sure adequate ventilation and safety precautions are present before installing the equipment.

1. Install the vacuum pump according to the Customer's darkroom plan and the Magnascan 6X6/Sirius Scanner Series Pre-installation Manual, (see Associated Documents).

WARNING

Lethal Voltage. Do not touch the vacuum pump terminals unless the Expose scanner is isolated from the AC supply.

2. Connect the AC inlet cable within the vacuum pump terminal box.
3. Check that the pump rotation is in the direction of the arrow shown on the cooling fan cover.

CAUTION

Do not connect the vacuum pump tube unless the rotation of the pump is in the direction of the arrow shown on the cooling fan cover.

4. Route the vacuum pump tubing to the expose unit and cut to length.
5. Connect the vacuum hose at the vacuum pipe union in the lower right-hand corner (as viewed from front) of the expose unit rear panel.
6. Connect the vacuum pump tube to the vacuum pump, (see Figure 4.11).

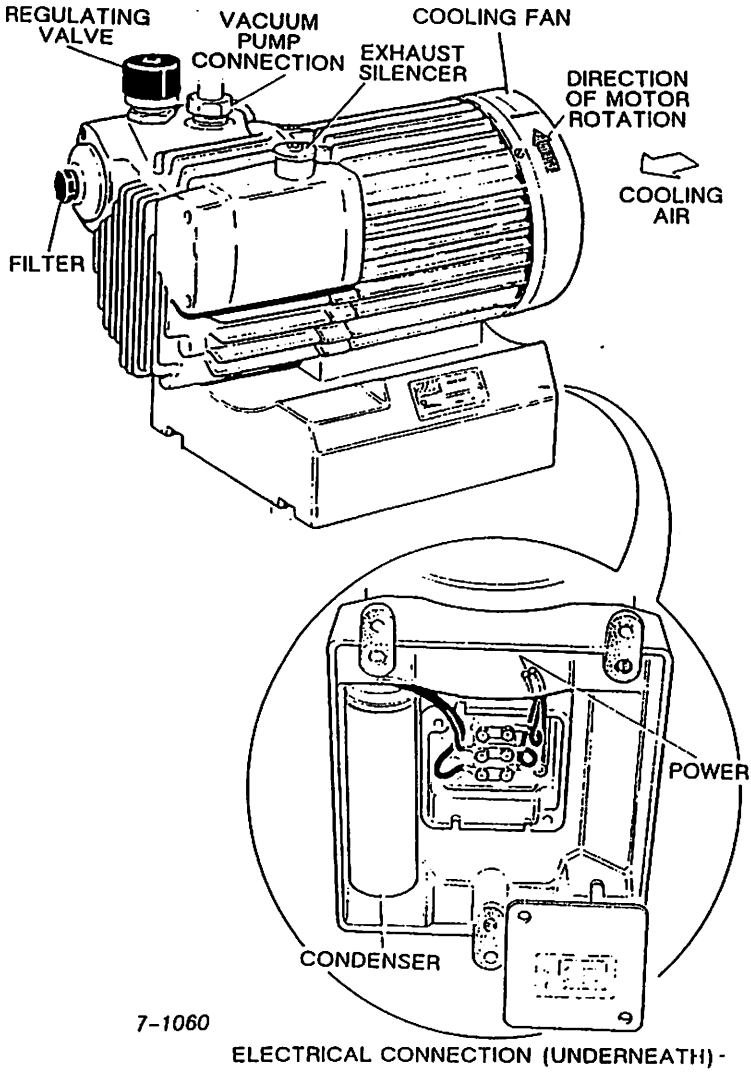
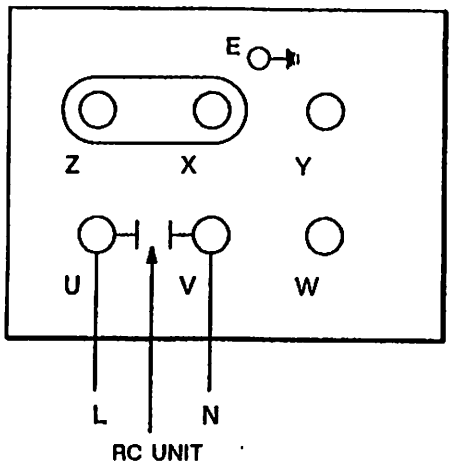


Figure 4.11 Vacuum Pump

TL 10V



TL 11V & TLV 10

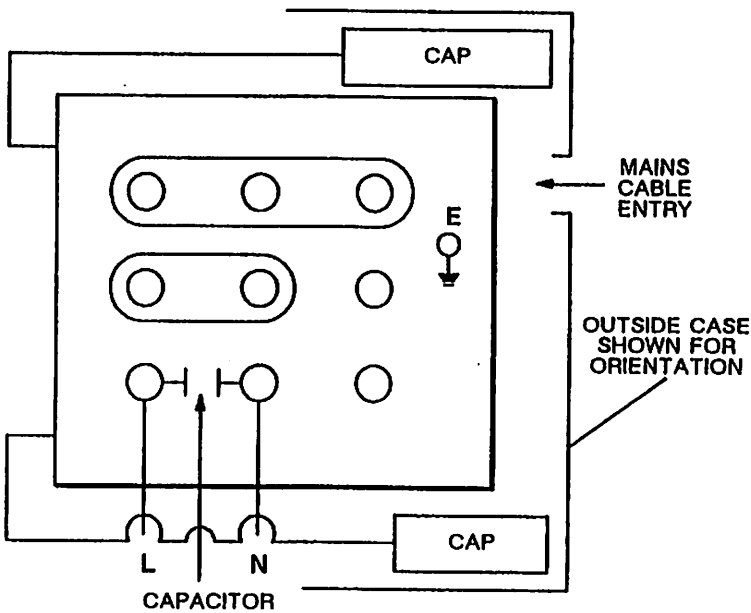


Figure 4.12 Vacuum Pump (TL10V, TL11V and TLV10) Terminal Block Mains AC Connections

4.4.2 Film Loading Table

See Figure 4.13.

1. Place the film punch in the required position on a work bench.

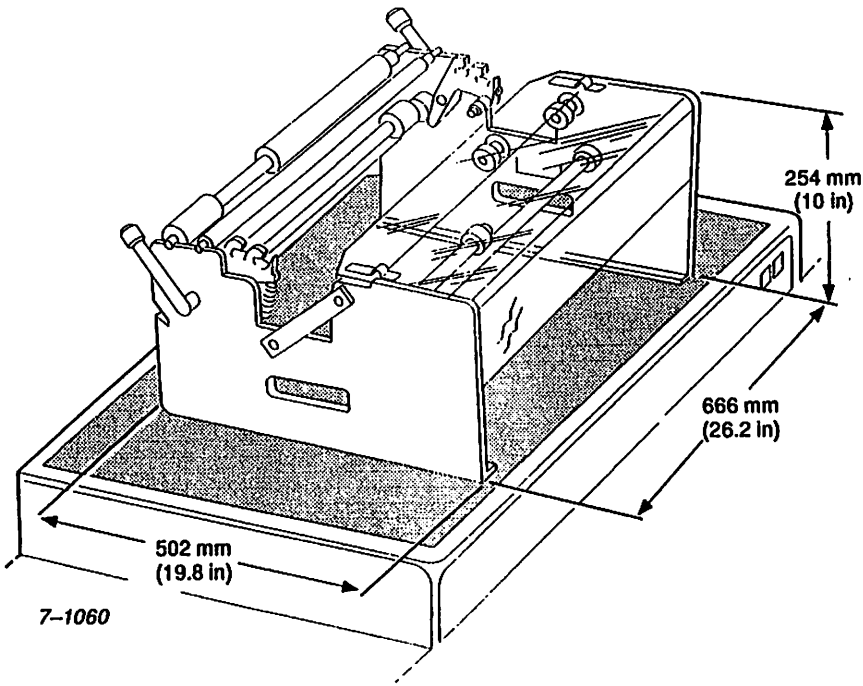


Figure 4.13 Film Loading Table

4.4.3 Film Punch

See Figure 4.14.

1. Make sure the left-hand edge stop is assembled with the 'A LITH' side facing inwards. The three pins 'P' should be in a 'DOWN' position.
2. Place the film punch in the required position on a work bench.

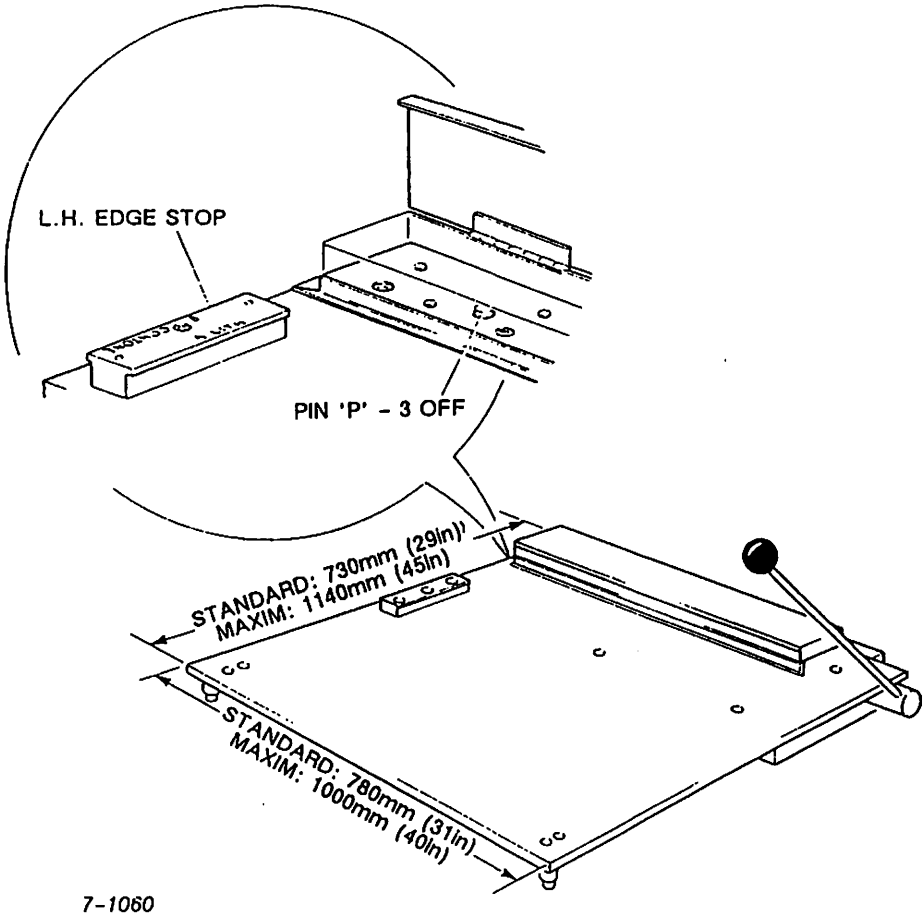


Figure 4.14 Film Punch

CHAPTER 5

COMMISSIONING AND TESTING

5.1 POWER-UP PROCEDURE

The analyse unit or expose unit cannot be switched on unless the respective interlocked LAMP (Xenon) or LASER switches are set to on.

The sequence for power-up is listed in Table 5.1.

Table 5.1 Power-up Sequence

Power-up
Xenon lamp (analyse unit) Laser (expose unit) Scanner switch (expose unit) Scanner switch (analyse unit)

5.1.1 Power-up the Xenon Lamp

See Figure 5.1

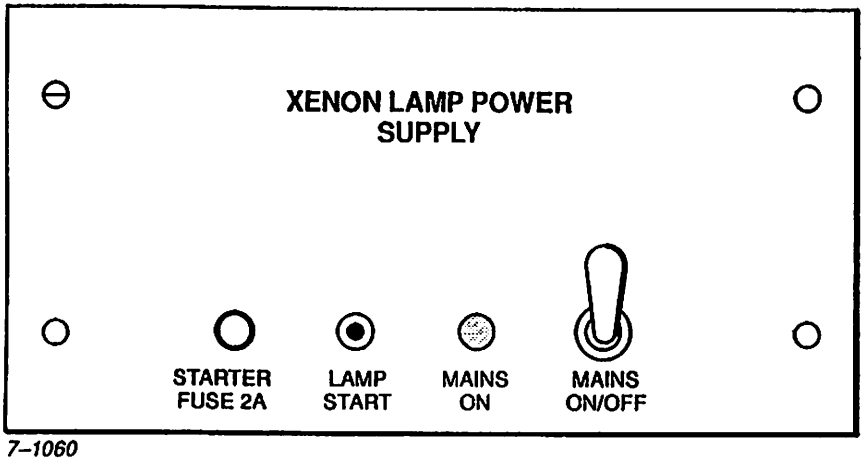
WARNING

The xenon lamp may burst whilst in use.

CAUTION

The electronics unit may be damaged if the Xenon lamp is powered-up after the analyse unit.

1. Ensure the analyse unit switch on the operator panel is set to OFF.
2. Remove the lower, left-hand, front panel from the analyse unit to get access to the XLS control panel.



7–1060

Figure 5.1 XLS Control Panel

3. Power-up the lamp as follows:
   a) Operate the 'LAMP' switch on the operator control panel.
   b) Operate the MAINS ON/OFF switch on the XLS control panel. Observe that the MAINS ON lamp is lit.
   c) Wait for, at least, 30 seconds.
   d) Press and release the LAMP START push-button on the XLS control panel.

      The lamp starter makes a noise for less than one second after which the Xenon lamp should be lit.

      If the Xenon lamp is not lit, wait for at least five seconds and press and release the LAMP START push-button again on the XLS control panel. Allow 60 seconds between any further attempts to light the Xenon lamp.
   e) Note the time that the Xenon lamp lit.

   Note: Most Xenon lamps illuminate at the first power-up attempt; but some may require two or three attempts at power-up (particularly when cold or new).

4. When more than five attempt to power-up the Xenon lamp fail, proceed as follows:
   a) Set the LAMP switch on the operator panel to OFF.
   b) Ensure the Xenon lamp is fitted correctly.

c) Repeat Steps 1, 2 and 3.

d) Set the SCANNER switch on the analyse unit to ON.

e) If this is the initial installation or a new lamp is fitted, do the procedure given in the 'ADJUSTMENTS AND ALIGNMENT' section on Xenon Lamp.

f) Refit the lower, left-hand, front panel of the analyse unit.

5.1.2 Power-up the Laser

See Figures 5.2 and 5.3

WARNING

Damage to eye. Never look directly into a laser beam.

WARNING

Lethal voltage. The voltages used in the laser circuits and power supplies are lethal. Exercise extreme caution.

WARNING

Danger to personnel. Do not power-up the laser, or attempt to do any alignment or adjustments to the optics unless you are instructed on safe working with class 3b lasers.

1. Make sure the expose unit switch is set to OFF.
2. Remove the front, right-hand, panel from the expose unit to get access to the Power Supply control panel.

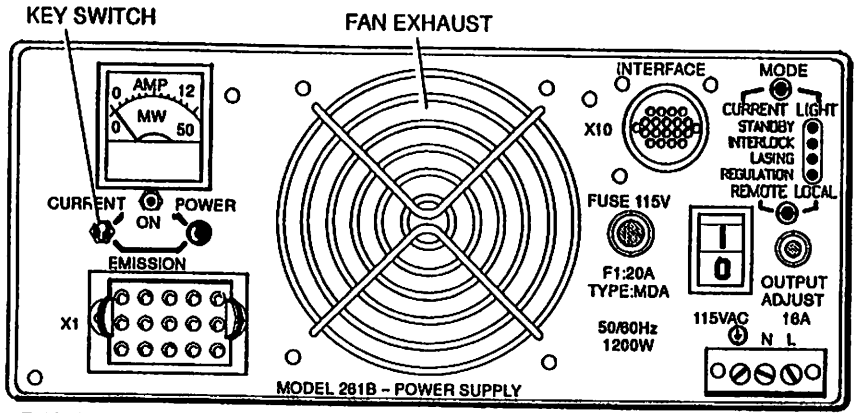


Figure 5.2 Laser Power Supply - Model SP261B

3. Set the appropriate power supply controls as listed in Table 5.2.

Table 5.2 Power Supply Controls

Control	Setting
Emission keyswitch	Off
Meter switch	Current (Model SP261B only)
Mode switch	Light
Output adjust	Not applicable
Power switch	Off
Ref switch	Remote

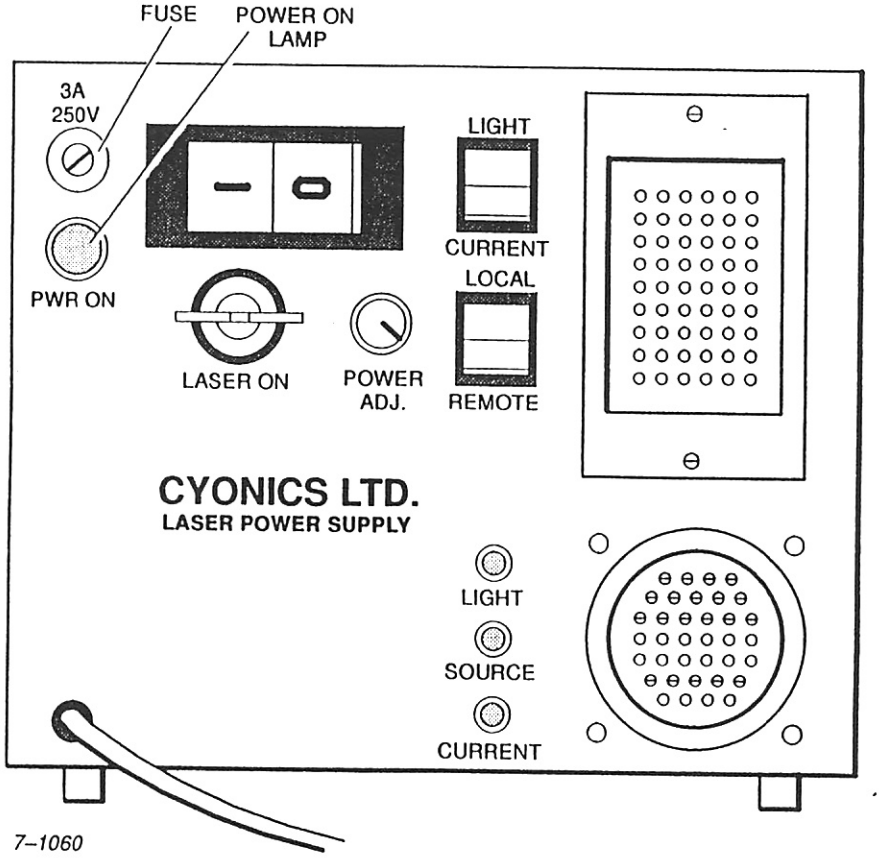


Figure 5.3 Laser Power Supply - Cyonics

4. Set the expose unit LASER switch to ON.

CAUTION

If the laser cooling-fan or the power supply cooling-fan is not heard to operate directly the laser AC power supply is applied, switch off immediately and investigate.

CAUTION

Check whether the laser is operating. If it is not, the failure must be investigated immediately.

5. Set the laser PSU POWER switch to ON and ensure the:
   - switch is lit
   - EMISSION indicators (Model SP261B only) are lit.
6. Set the EMISSION switch to ON. If the SP261B PSU is fitted, observe the LED indicators;
   - STANDBY is lit - indicates the equipment is set for normal, full power operation
   - INTERLOCK is lit - indicates the interlock chain is complete
   - REGULATION is lit - indicates the output regulation circuit is functioning
   - and when approximately one minute has elapsed, LASING is lit - indicates the plasma tube is lasing.

5.1.3 Power-up the Scanner

1. Set the expose unit SCANNER switch to ON and check that the emergency-OFF switch lamp is lit.
2. Set the analyse unit SCANNER switch to ON and check that the emergency-OFF-switch lamp is lit.
3. Select **[CAL] 46** and set the laser power to approximately 2.0 mW (this gives approximately 4.0 A current).
4. Rotate the analyse cylinder through one revolution. This sets the cylinder's angular position in the scanner's computer.

Note: If the angular position is not set, position entry is not possible.

5.1.4 Analyse Unit Keyboard Check

1. Ensure the buttons on the operator panel (analyse keyboard) are functioning correctly. A simple analyse keyboard diagnostic program is built into the scanner. This diagnostic test is not automatic and, therefore, requires the operator to check the results.

2. Press, and hold pressed, FAST and STOP at the same time.

3. Release STOP

4. Release FAST

   All segments and dots of the current value display illuminate (i.e. 8.8.8.8.8.).

   The alphanumeric display shows the following:

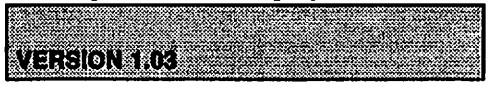
   The six illuminated push-buttons are lit.

   A continuous bleep is emitted.

   Look for an absence of any of the above as an indication of a board failure.

5. Press FAST

   The following appears on the alphanumeric display:

6. Press any push-button.

   The display shows the row number (counting from left to right) and the column number (counting from top to bottom).

   Any buttons which do not indicate the correct column and row, signify a board or switch failure.

7. Press STOP to return the analyse unit to the normal mode of operation.

5.1.5 Operation of Optics Solenoids

1. Press:

   and ensure that the analyse unit is able to enter the VIEW mode.

2. Press:

   and ensure that the analyse unit is able to enter the REFLECTION COPY mode.

3. Check the operation of the optics solenoids in accordance with the Analyse Optical Systems Service Module, (see Associated Documents).

5.2 ADJUSTMENTS AND ALIGNMENT

5.2.1 Vacuum Pump

1. Adjust the vacuum to 457 mm (18 in) of mercury when the cylinder is rotating.

   Note: A vacuum pressure gauge, scaled from zero to 762 mm (zero to 30 in) is required.

2. Adjust the Pressure Trip Switch (detailed later).
3. Adjust the Pressure Release Valve (detailed later).

Pressure Trip Switch

See Figure 5.4.

1. Remove screw 'G' (cross-head).
2. Remove the pressure trip switch cover.
3. Loosen locknut 'H'.
4. Install a screen on the vacuum pump.
5. Screw the pressure relief valve in to obtain maximum vacuum.
6. Install a film on the Expose cylinder.
7. Observe the vacuum gauge, this should read approximately 635 mm (25 in) of mercury.
8. Unscrew the pressure relief valve until the vacuum gauge reads 406 mm (16 in) of mercury.
9. Set a digital multimeter to the resistance range and connect the multimeter between the MAUVE and WHITE wires of the pressure trip switch.
10. Turn the knurled wheel in the switch so that the switch operates at 406 mm (16 in) of mercury.

    Note: The multimeter should show a closed circuit (0 ohm) when the gauge shows equal to, or greater than, 406 mm (16 in) of mercury.

    The multimeter should show an open circuit (infinity) when the gauge shows less than, 406 mm (16 in) of mercury. (This condition can be produced if one edge of the film is lifted.)

11. Tighten locknut 'H'.
12. Check the operation of the pressure trip switch.

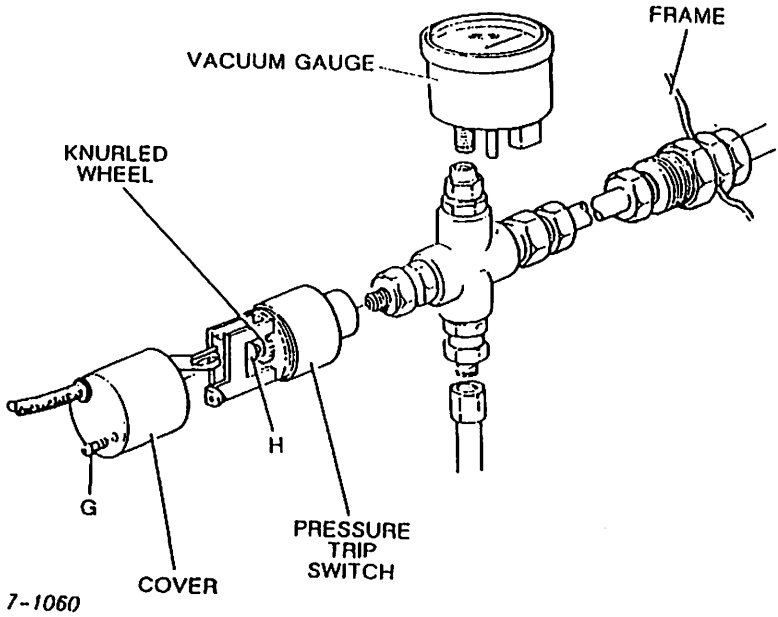


Figure 5.4 Vacuum Pump Pressure Trip Switch

Pressure Release Valve

See Figure 5.5.

1. Screw the pressure relief valve in, to obtain maximum vacuum.
2. Unscrew the pressure relief valve until the gauge reads 457 mm (18 in) of mercury.
3. Stop the cylinder and observe the gauge. (A reading of greater than 508 mm (20 in) of mercury indicates excessive leakage.

   Note: Leakage of air into the vacuum system may be due to a;

   - badly fitted film
   - failed or loose vacuum seal (Deublin Coupling)
   - loose tube connectors (this reduces the vacuum whether the cylinder is stationary or rotating).

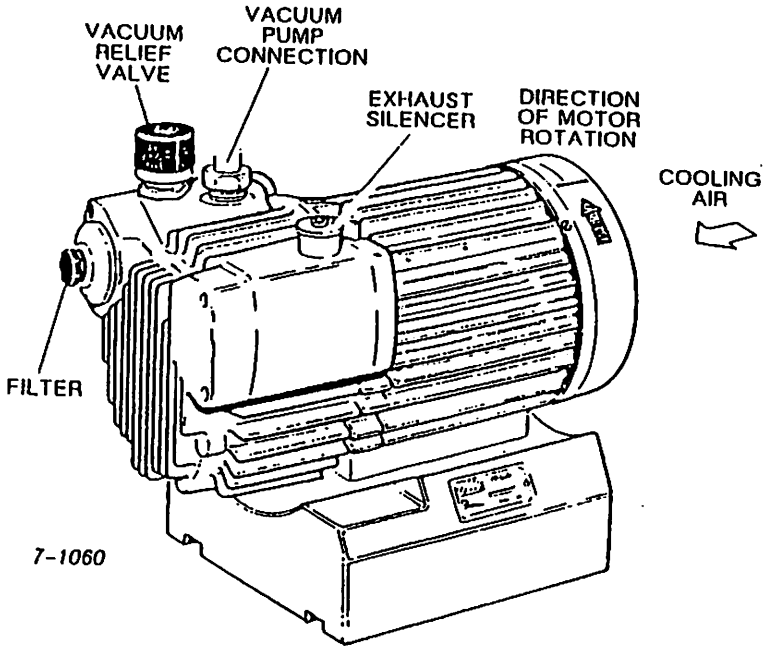


Figure 5.5 Vacuum Pump Pressure Relief Valve

5.2.2 Xenon Lamp

1. If necessary, remove the lower, left-hand, front panel from the analyse unit to get access to the XLS control panel.
2. Connect a digital multimeter (set to DC voltage) across the test points on either side of the XLS input socket.
3. If necessary, adjust the potentiometer (with a potentiometer-trimming tool, inserted through the hole above the input socket) to obtain a reading of 1.06 V (this gives an operating current of 8.5 A). This setting is important to the working life of the Xenon lamp.
4. Make sure that the Xenon lamp is lit for at least 30 minutes.
5. Adjust the lamphouse optics controls to get the best light output.

Note: The luminous intensity of a new lamp changes rapidly during the first half hour of its working life, with a slower variation during the following two to three hours. When two days elapses the Xenon lamp is stable.

6. Repeat Step 5 every few hours during the working day until the output of the Xenon lamp is stable.

7. Refit the lower, left-hand, front panel of the analyse unit.

5.2.3 Initial Load of Basic Values (BVs)

BVs must always be loaded immediately following Power-up. This is done by transferring BVs into Customer Value (CV) blocks 1 and 2 via **[CAL] 230**.

The transfer of BVs is necessary at initial set-up or whenever any CV corruption occurs (e.g. when changing a system controller board). This is to prevent random data entering the CV blocks.

The BVs can be recalled as a whole via **[CAL] 199** or as individual blocks using Block 0 of the required CAL number.

Any entry using **[CAL] 230**, Block 1 overwrites all the independent V Block 1 numbers (that is all the CVs from 201 to 253 inclusive). This also applies to **[CAL] 230**, Blocks 1, 2 and 3.

The CVs contained in the Test Film Folder should be loaded into the scanner. The method of doing this is important. The following sequence is found to be most reliable.

Note: If the CVs are corrupted use **[CAL] 902** to load BVs into the CVs.

1. Press: CAL

   Press: **199** - Load BVs

2. Press: CAL

   Press: **230** - Block 1 - store BVs in CV1

3. Press: CAL

   Press: **199** - Load BVs

4. Press: CAL

   Press: **230** - Block 2 - store BVs in CV2

5.2.4 Analyse Unit Optics Settings

The Xenon lamp position must be set and the analyse spot centered before the Analyse Unit Optics Checks in Section 5.2.6 can be done.

There are three adjustments necessary to set the Xenon lamp positions:

- Centre the Analyse Spot
- Reflection Copy
- Transmission Copy.

Allow at least 30 minutes for the lamp to warm up and stabilize before commencing this adjustment.

There are separate adjusters for Reflection copy and for Transmission copy.

CAUTION

Do not centre the spot by observing minimum density readings. This can lead to inaccurate alignment and colour tracking errors.

Centre the Analyse Spot

See Figure 5.6.

1. To obtain the scanning spot on the view screen;

   Press: [CAL]

   Press: **40**

   Press: [ENTER]

2. Set the horizontal and vertical adjusters on the optical head to centre the spot on the cross-hairs within one tenth of the spot dimensions. Focus the spot.

3. Make sure the spot remains centered;

   - when cylinders are changed
   - during rotation and traversing
   - following removal and insertion of the centre optics lens.

Note: Apparent spot misalignment can be due to the use of sub-specification cylinders suffering from concentricity errors. This problem can be readily checked by observing the spot on the viewer while the cylinder is manually rotated and traversed. Any apparent movement of the spot implies that the cylinder should be replaced.

The spot centre can be checked at any time by selecting **[CAL] 40 [ENTER]**. Do not reset the spot unless the spot is more than one tenth of its diameter in error.

The Large cylinder spot is focused on an UGRA transparancy, 180 micron above the cylinder surface. The small cylinder spot is focused on the cylinder surface.

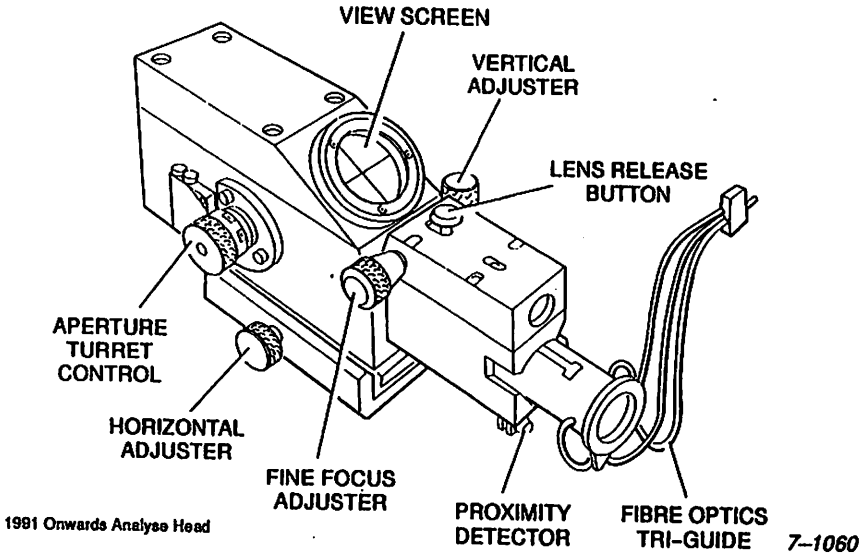


Figure 5.6 Analyse Head Adjusters

Reflection Copy Procedure

See Figure 5.7.

1. Fit the reflection copy blanking plug and a large cylinder.
2. Mount a white reference patch (5511-4140), or baryta paper, on black paper on the cylinder.
3. Press: [V] and focus the analyse head on the patch.
4. Set the analyse aperture to 3 or 4.
5. Do an autobalance.

   Note: If the lamp position causes the autobalance to fail, continue the procedure as a first approximation and repeat the procedure for final adjustment.

6. Press: CAL

   Press: **41**

7. Set the lamphouse reflection adjusters A and B to give minimum density read-out on the magenta channel.

8. Press: CAL

9. Press: STOP

Transmission Copy Procedure

See Figure 5.7.

1. With a large cylinder fitted, select analyse aperture 3C. With a small cylinder fitted, select 2B.

2. Do an autobalance.

   Note: If the lamp position causes the autobalance to fail, select a lower density lamphouse filter position (C, B or A) until a density read-out is obtainable.

   Continue the procedure as a first approximation and repeat the procedure for final adjustment.

3. Press: CAL

   Press: **41 or 42** so that density prediction is approximately 0.4 or 2.4 respectively.

4. Set the lamphouse transmission adjusters A and B to give minimum density read-out on the magenta channel.

5. Turn adjuster B counter-clockwise until the density read-out in the magenta channel increases by 0.10 to 0.15.

Note: This moves the lamp cathode image away from the analyse lens aperture and sets the Xenon arc to a stable position.

6. Press: CAL

7. Press: STOP

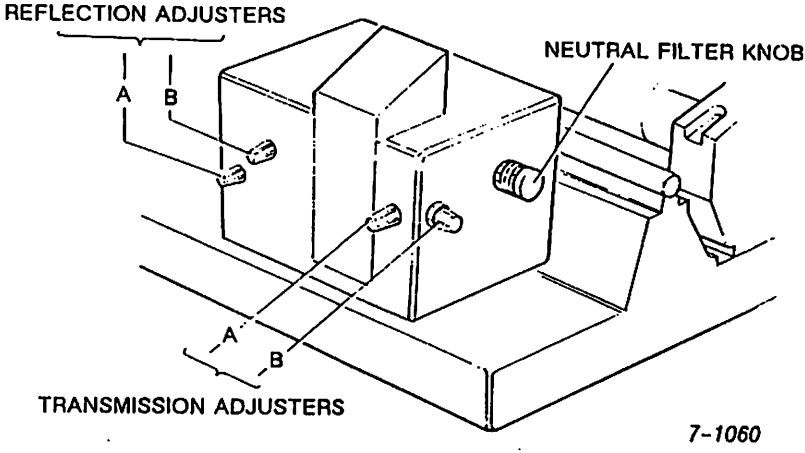


Figure 5.7 Lamphouse Adjusters

5.2.5 Analyse Unit Optics Adjustments

Cross-hair Alignment Adjustment

See Figure 5.6.

1. Remove three screws and the ring on the analyse head viewer.
2. Loosen the three screws securing the cross-hair bezel.
3. Adjust the cross-hair position and tighten the three securing screws. Take care not to alter the cross-hair position.
4. Perform the **Cross-hair Alignment Check**, (see Section 5.2.6.1).

5. Repeat from Step 2 until the cross-hair is aligned correctly.
6. Refit the viewer ring and secure using the three screws removed at Step 1.

Centre Optics Lens Focus Adjustment

See Figure 5.8.

1. Fit:
   - A small cylinder with the appropriate optics (fitted before the cylinder)
   - Crosfield Electronics Resolution Chart (5511-4110) on the cylinder, emulsion side up.
2. Focus the analyse lens.
3. Traverse the analyse carriage towards its extreme right-hand position and determine if the required focus adjustment is towards or away from the inside surface of the cylinder. This can be done by gently flexing the centre optics tube slightly whilst viewing the view-screen.
4. Remove the cylinder and the centre optics lens.
5. Use a small Allen key to slacken the lens locking ring.
6. Give the ring a quarter of a turn in the appropriate direction.
7. Secure the lens locking ring.
8. Refit the centre optics lens.
9. Refit the cylinder.
10. Press: STOP

    Press: **40.**

    Select a clear area of the cylinder to inspect the analyse spot for sharp focus in the viewer.

11. A final setting accuracy of ± one eighth of a turn of the locking ring must be attained by repeating the following as many times as necessary;
    - remove lens
    - adjust
    - refit lens
    - check lens focus.
12. Repeat from Step 1, but using a large cylinder.
13. Repeat **Check the Centre Optics Lens Focus**, (see Section 5.2.6.2).

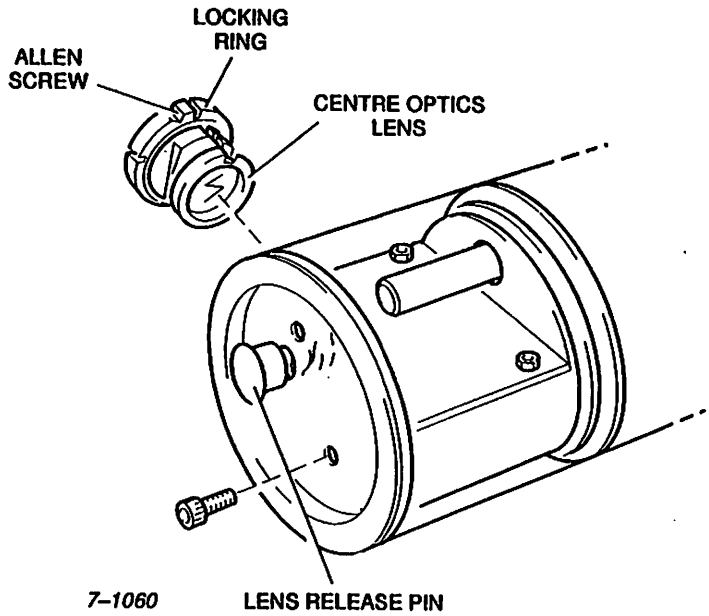


Figure 5.8 Centre Optics Tube Lenses

5.2.6 Analyse Unit Optics Checks

These are:

- Check the Cross-hair Alignment
- Check the Centre Optics Lens Focus.

The procedures for adjustment of failed checks are given in Analyse Unit Optics Adjustments (see Section 5.2.5).

5.2.6.1 Check the Cross-hair Alignment

1. Ensure the Analyse Unit Optics Settings (see Section 5.2.4), have been satisfactorily completed.
2. Fit a small cylinder with the appropriate optics (fitted before the cylinder).
3. Fit the Crosfield Electronics Resolution Chart (5511-4110), emulsion side up, on the cylinder.
4. Adjust the analyse lens to give the best focus at the centre of view.
5. Select a clear area of the chart and do an autobalance using aperture 1A.
6. Press (VIEW mode push-button)

   and traverse until the vertical edge of one of the black squares is close to coincidence with the vertical cross-hair.
7. Turn the leadscrew by hand very slowly to bring the black edge as close as possible to coincidence.
8. Cancel VIEW mode and check that the density readout on the digital display is between 0.15 and 0.55.
9. Select VIEW mode and check the black edge passes through the viewer within 0.05 mm (.002 in) of the centre of the cross-hairs.

Note: If the required positioning accuracy cannot be readily achieved, the following technique may be used;

a) Select VIEW mode and position the resolution chart so that the vertical edge of the black square is almost, but not quite, parallel to the vertical cross-hair.

b) While rotating the cylinder slowly, observe that the vertical edge of the black square moves, very slowly, in the direction of the horizontal cross-hair.

c) Cancel VIEW mode and obtain original density read-outs between 0.15 and 0.55 by this means.

10. Repeat from Step 4, but use the *horizontal* edge of the black square against the horizontal cross-hair.

5.2.6.2 Check the Centre Optics Lens Focus

See Figure 5.8.

Incorrect focus can cause density read-out errors and apparent changes in hue. The centre optics lens focus must be checked for both the small and the large cylinder. Before carrying out this check, first ensure that the following have been satisfactorily completed:

- Analyse Optics Settings, see Section 5.2.4 (includes analyse spot centering and Xenon lamp positioning).
- Check the Cross-hair Alignment (see Section 5.2.6.1).

1. Fit a small cylinder with the appropriate optics (fitted before the cylinder).
2. Fit the Crosfield Electronics Resolution Chart (5511-4110), emulsion side up, on the cylinder.
3. Adjust the analyse lens to give the best focus at the centre of view.
4. Press: CAL

   Press: **40**

5. Select a clear area of the cylinder and inspect the analyse spot of the viewer. If the spot is not sharply focused see Analyse Unit Optics Adjustments, (see Section 5.2.5).

6. Select a clear area of the chart and do an autobalance using aperture 1A.

7. Select lamphouse filter B and, viewing the clear cylinder, note the original density read-outs for Y, M, and C.

8. Install the Crosfield Electronics Resolution Chart (5511-4110), *emulsion side down*, on the cylinder.

9. Adjust the analyse lens to give the best focus at the centre of view.

10. Select an area of clear cylinder and note the original density read-outs for Y, M and C.

    - the absolute values should not change by more than 0.02 from the values noted in Step 8
    - the difference between any pair of read-outs should not change by more than ±0.01 from the values noted in Step 8

    If a change is greater than the given values, see Analyse Scanner Optics Adjustments, (see Section 5.2.5).

11. Fit another Crosfield Electronics Resolution Chart, emulsion side up, on top of the chart fitted in Step 9 and focus the analyse lens onto the upper emulsion.

12. Repeat Step 10.

5.2.7 Laser Adjustment

1. Press: CAL

   Press: **46**
   to select the necessary laser power to produce 48% dot at step 16 on the electronic grey scale.

2. Initiate a Laser Log book in which to record the details listed in Table 5.3.

Table 5.3 Laser Log-book Details

Heading	Remarks
Laser current (Amps) Laser light output (mW) Filter used (ND) Film type Processor chemistry * Processor speed * Processor temperature * D. max density	* (Control Strips)

5.3 DIAGNOSTICS, TESTING AND CALIBRATION

WARNING

In any emergency, push the red emergency stop push-button.

Make sure a colleague is present when tests are being done.

CAUTION

Before moving the carriage check that there is sufficient oil on the leadscrew.

5.3.1 Checking the Safety Interlocks

See Figure 5.9.

Check all microswitches (detailed later) are operating correctly. See the Magnascan Analyse Service Module, (see Associated Documents), if adjustments are required.

Carriage Traverse Limits (Analyse and Expose Units)

1. Make sure the left-hand (M1) and right-hand (M2) microswitches operate.

Cylinder Release (Analyse Unit)

1. Check that M3 is closed when the small cylinder is in place and M5 is closed when the large cylinder is in place.
2. Check the small cylinder cannot be released when the cylinder cradles are down (M4).
3. Check the carriage does not traverse in either direction if the analyse lens is in the forward position and a large cylinder is mounted (M5).

Outrigger Bearing Limits (Analyse Unit)

WARNING

Once the carriage is moved beyond the bearing limit microswitch (M6), the carriage is able to rotate the cylinder.

Check that a rotating cylinder cannot be released (M6).

Lid Safety Interlocks

Cylinder Rotation Interlock (Analyse and Expose Units)

1. Ensure the Unimax rotary interlock switch (M7) prevents the cylinder from rotating when the lid is open.

Lid-Opening Interlock (Expose Unit)

A solenoid-operated interlock switch (M11), located in the operator panel, is latched by rotation of the cylinder and thus prevents the lid from being opened while the cylinder is rotating.

The interlock switch (M11) fails-safe if power fails (causing the cylinder to stop). To unlatch the interlock switch, either;

- power must be applied or;
- the operator must release the interlock switch manually from beneath the operator panel.

Load Film push-button (Expose Unit)

Ensure the cylinder rotates slowly when the lid is open and the LOAD FILM push-button is pressed (M8).

Datum Position (Analyse Unit and Expose Unit)

Ensure the start position error is less than 2 mm (0.08 in) (M9).

Xenon Lamp Cover (Analyse Scanner)

Check that the lamp only illuminates when the lamp cover is in place (M10).

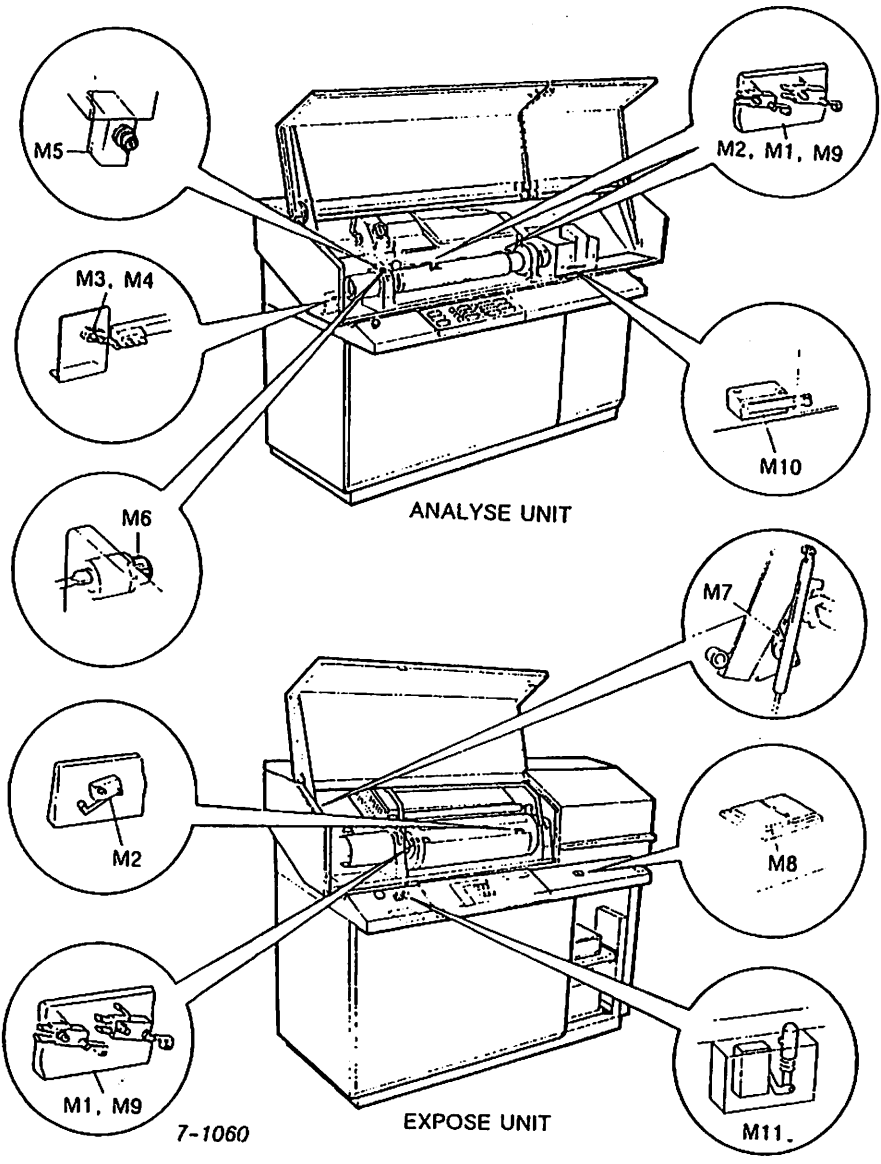


Figure 5.9 Locations of Microswitches

5.3.2 Analyse Cylinder Overspeed Protection

See Figure 5.10.

The analyse cylinder overspeed protection circuit is a high-reliability, fail-safe circuit, which consists of a motor control relay. The relay is used to cut power to the cylinder motor if it loses its electrical power due to the following failure conditions:

- cylinder overspeed due to cylinder servo heatsink assembly failure
- cylinder overspeed due to cylinder motor encoder failure
- cylinder overspeed due to short circuit from the motor's negative terminal to earth
- stalled cylinder due to seized bearings, etc.

The relay is wired in a fail-to-safe configuration so that electrical power to the relay is also removed due to the following:

- AC input is turned off
- the 5 V power protection is lost
- the 24 V power supplied to the relay is lost.

If, due to any of the previously described failures, either the large or small analyse cylinder rotates at over 1100 r.p.m., the motor control relay has electrical power removed. A dynamic brake is also brought into action to slow the cylinder.

Cylinder overspeed is detected by two methods:

- the analyse cylinder overspeed board samples cylinder 'data A' from the motor encoder and if this data exceeds the normal running frequency, electrical power to the relay is removed.
- Observe whether cylinder 'data A' is toggling. If cylinder 'data A' is not toggling, electrical power to the relay is removed.

The relay can be reset by means of a reset switch. There is also an LED which is lit when the relay is energized. If the reset switch is purposely held in the down position, during the failure conditions described previously, the cylinder does not overspeed.

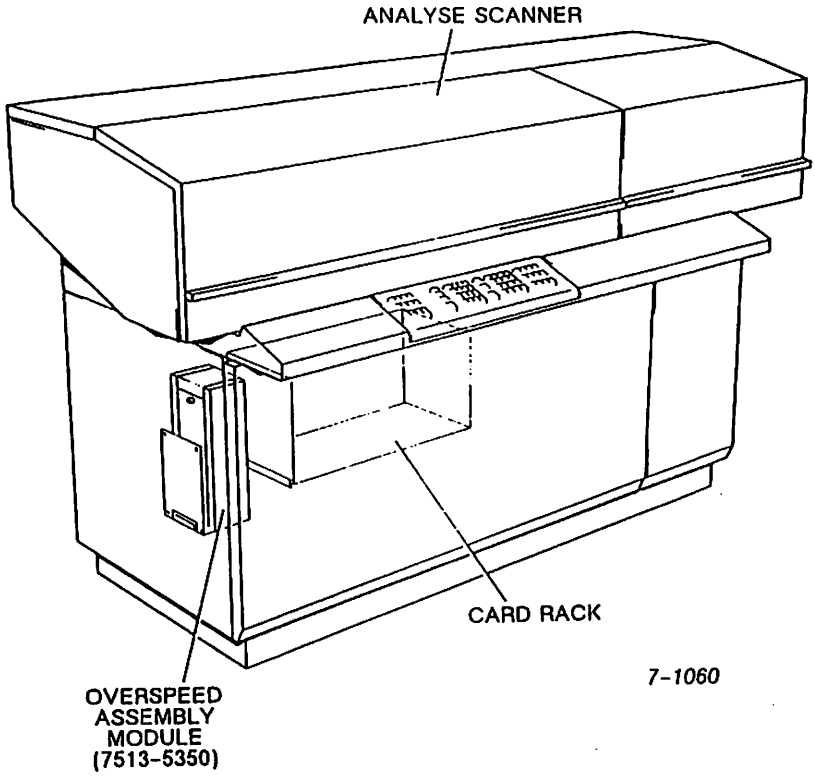


Figure 5.10 Position of the Overspeed Assembly in the Analyse Scanner

5.3.3 Testing

WARNING

In any emergency, push the red emergency stop push-button.

WARNING

Make sure a colleague is present when tests are being done.

WARNING

Ensure the scanner lid is closed and all upper covers are in place when test 2 is conducted.

Test 1

1. Check the LED on the overspeed board is lit. (If this is not the case, operate the momentary-action toggle switch on the overspeed board.)
2. Fit the large cylinder.
3. Override the Unimax rotary interlock switch. To do this:
   a) remove the grub screw in the locking arm.
   b) move the arm into the 'lid-closed' position of the switch, enabling rotation of the cylinder.
4. Grasp the cylinder firmly and enter **[CAL] 945**. This prevents cylinder rotation.
5. When one second elapses, ensure the torque developed by the motor ceases.
6. Ensure the overspeed board's LED is *unlit*.
7. Check that the cylinder reaches normal operating speed.
8. Press: STOP

Test 2

1. Traverse the carriage until the optical head is in the central position.
2. Connect a wire link (26/30) from the cylinder motor negative terminal to earth (scanner frame).
3. Close the lid.
4. Ensure all upper covers are in place.

5. Press: CAL

   Press: **945**

   The cylinder rapidly accelerates to 1042 r.p.m. At this speed, electrical power to the relay is removed and the LED is *unlit*. The cylinder is decelerated by a dynamic brake.

   Note: At a cylinder rotation of 1042 r.p.m., the duration of the 'data A' square wave is 36.7 µs.

6. Wait for the cylinder to stop.
7. Remove the wire link from the cylinder motor negative-to-earth.
8. Press: STOP
9. Operate the momentary-action switch on the overspeed board.
10. Make sure the LED is lit.
11. Refit the grub screw in the locking arm of the Unimax rotary switch.

5.3.4 Safelight, Film-fog test

Safelight fog causes prediction errors.

1. Check the safelights.
2. Cut a piece of 20% to 30% pre-exposed film into strips.
3. Mask one half of each strip completely. Mask the other half partially (with a coin or other small item).
4. Place the strips around the work area, including the film loading area.
5. Leave the strips in position for several minutes.
6. Process each strip normally.

7. Inspect each strip for any sign of fog. If fog is present on any of the strips, the following are suggested remedies:

   - do not use red fluorescent tubes. They are usually too bright and give out the wrong spectral band for fast scanner films
   - If fluorescent tubes are installed, reduce the light intensity by wrapping exposed continuous-tone film around the tube
   - prevent white light entering through doors, cracks in the ceiling and around the entrance to the processor
   - put lower wattage lamps in safelights
   - Raise the height of the safelights
   - Replace cracked or damaged safelight filters
   - Turn the safelight upside down, to reflect the light off of the ceiling.

5.3.5 Expose Unit Light Tightness Test

1. Place a full-size, 20% to 30% pre-exposed sheet of film on the expose cylinder under safelight conditions.
2. Note the position of the cylinder for future reference.
3. Close the expose lid.
4. Switch on all white room-lights and leave the film on the cylinder for at least one hour; the mid-day lunch break is a suitable time for this test.
5. Process the film for the normal development time.
6. Check the film for fog. If a fog appears on the film:
   a) Mount the exposed and processed film on the expose cylinder with a sheet of white paper underneath the film.
   b) Turn the cylinder to exactly the same position as set during the exposure. This indicates where light is entering.

   Possible points of entry are:

   - around the expose lid

- at the base of the expose cover
- from the laser housing.

5.3.6 Output Tests

Pre-load on Analyse and Expose Leadscrews

1. Traverse the carriage slowly in each direction.
2. During each traverse, measure the voltage across the Screw Current Test Points (TP3 and TP4) at the bottom, left-hand side of the analyse/expose unit.
3. Multiply the voltage reading by 10 to obtain the current value in Amperes, i.e.:

   Leadscrew current (A) = Voltage measured x 10

   The result should be in the range 1.5 A to 2.5 A.

Cylinder Torque Demand

Perform cylinder torque demand check as detailed in Magnascan Analyse Mechanical Service Module, (see Associated Documents).

Note: **[CAL] 940** and **945** are inoperative and therefore cannot be used as a means of carrying out the cylinder torque demand check.

Dot Quality Checks

Dot quality checks consist of:

- 32-step grey scale
- CAL 816.

32-Step Grey Scale

1. Run 32-step grey scales for all angles and turret positions.
2. Examine for:
   - Dot quality
   - Moire levels (Moire levels should not be seen)
   - maximum density (greater than 4).

CAL 816

1. Press: CAL

   Press: **816** and do a 16-step grey scale test.

   Expose the film in 50 mm strips to check for Moire level:
   - hard Moire levels should not be visible if less than 95%
   - soft Moire levels should not be visible if less than 88%.

Note: The effect of interaction between the K-prism and magnification alignments is in the ration of 5:1. i.e.
- a 5% K-prism adjustment results in a 1% magnification adjustment
- a 1% magnification adjustment results in a 0.2% K-prism adjustment.

5.3.7 Plain Tint Check

Produce a plain tint using the full length of the expose cylinder.

5.4 INSTALLATION REPORT

Prepare an installation summary and complete any applicable failure reports.

APPENDIX A

PARTS LIST

1.Standard Analyse Support Pack (7530-2210)

Component Number	Description	Quanitity
7503-1560	Scanner Power Cable	1
9926-5068	3AF-1.1/4 CA CSA Approved	2
9971-0175	280x159x95mm Box ASC M12	1
9972-0212	Cable Ties SST/2/S	30

2.Standard Expose Support Pack (7503-2100)

Component Number	Description	Quantity
7502-9660	Earth Cable Anal Exp	1
7503-1560	Scanner Power Cable	1
7503-1580	Vacuum Pump Hose	1
7503-7880	VAC Pump Pwr Cable (EXT)	1
9928-5068	3AF 1.1/4 CA CSA Approved	2
9930-2249	Grommet Button PR HV6087F	2
9975-3443	Flextract Ducting 3O/3D	1
9976-0947	Hose Clip for 70-89mm Tube	2
9996-3500	Polythene Bag 14 x 15	1

3. Standard Scanner Operator Pack (7503-2030)

Component Number	Description	Quantity
5511-4280	Printer Rule	1
7503-0940	Xenon Lamp Top Lead Assy	1
7503-1560	Scanner Power Cable	1
7503-2410	CYL Cleaning Tool	1
7503-6170	Can of Maccurat 32 Oil	1
7507-6120	PI Cardboard container	1
7513-8540	PI X/Lamp 150W Gas Filled	1
9900-0006	Feint Ruled Book 110x8	1
9900-0147	Cellotape Trans	1
9928-5068	Fuse 3A 6.3x32mm Fast Act	2
9990-3411	Hex Allen Key 906-4219-AMF	1
9990-4013	Plier Slip Jnt Pipe Grip	1
9990-5090	Brush-Static Master	1
9990-5545	Plastic Oil Can with Bras	1
9996-2068	Tube White Pet Jelly	1
9996-4096	Plastic Selo Tape Dispens	1
9996-5080	Kleenex Tissues Boxes	1
9996-5082	Packet Cotton Buds	1
9998-9349	Head Band Safety SB600	1
9998-9354	Safety Visor Clear SV9PC	1
9998-9402	Gauntlets AA/5C	1

APPENDIX B

EQUIPMENT DIMENSIONS AND WEIGHT

Note: All dimensions are in centimeter (CM) unless stated otherwise.

Description of Parts	Dimensions and Weights			
	Length	Depth	Height	Weight
ANALYSE UNIT:				
626/636 and Sirius 260	227	87	127	622Kg
EXPOSE UNIT:				
626E/636E Sirius 260	198	87	127	643Kg
626M/636M Sirius 260	200	98	128	761Kg
CASTORS	-	-	6	-
MAXIMUM POINT FLOOR LOADING PER CASTOR	-	-	-	185Kg

APPENDIX C

POWER REQUIREMENTS

All scanner and associated equipment requires a conditioned mains supply of Single-Phase 200-250V ac 48-62Hz.

Note: Two-Phase 110V ac may also be suitable.

CAUTION

On Single-Phase systems, the same phase must be used for Analyse and Expose Units. On Two-Phase systems, the same Phase must represent LIVE and the same Phase represent NEUTRAL for all Units.

MAXIMUM POWER RATING

Scanners 3.7KVA (With E-type Expose Unit)

Scanners 4.1KVA (With M-type Expose Unit)

SWITCHED SUPPLIES

The scanner requires a standard 13A switched socket.

APPENDIX D

BOARD AND CONNECTOR POSITIONS

The following sections give the scanner board and connector positions. The board positions are given by slot number, (see Figure D.1).

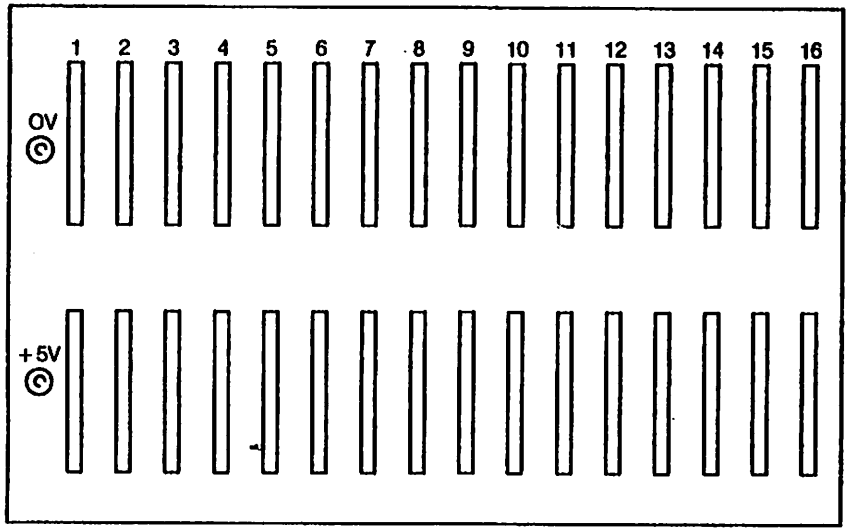


Figure D.1 Scanner Board Slot Numbering

D.1 ANALYSE UNIT

D.1.1 Backplane - Analyse Unit

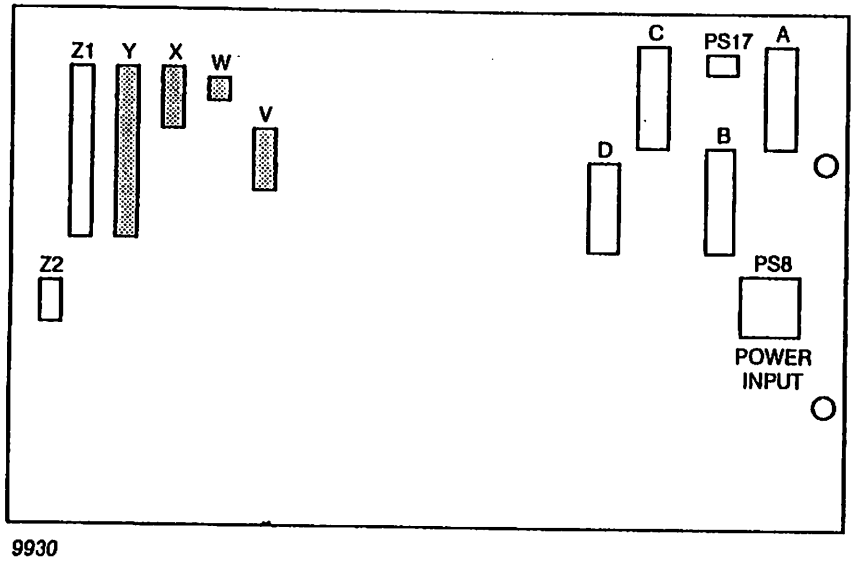


Figure D.2 Analyse Unit Backplane (Rear View)

Board Locations and Socket connections

Slot No.	Board
1	Phase Loop
2	Servo Controller
3	Memory Extension
4	System Controller
5	Spare
6	USM Yellow
7	USM Magenta
8	USM Cyan
9	USM Control
10	Matrix Memory
11	Interpolator and Summing
12	Test
13	Interface Controller *
14	Resolution Converter *
15	1-MByte Buffer I/O *
16	Spare

Socket No.	Connection
PLA	Servo Bus
PLB	Keyboard Bus
PLC	MUX Bus
PLD	IPPS Bus
PLV	OPPS Bus
PLW	Serial Link
PLX	Expose Bus
PLY	Image Bus
PLZ1	Not Used
PL17	Not Used
PS8	Input Power

* Fitted to Sirius 260 Scanner

\+ Fitted with remote diagnostics

D.2 EXPOSE UNIT

D.2.1 Textran Rack

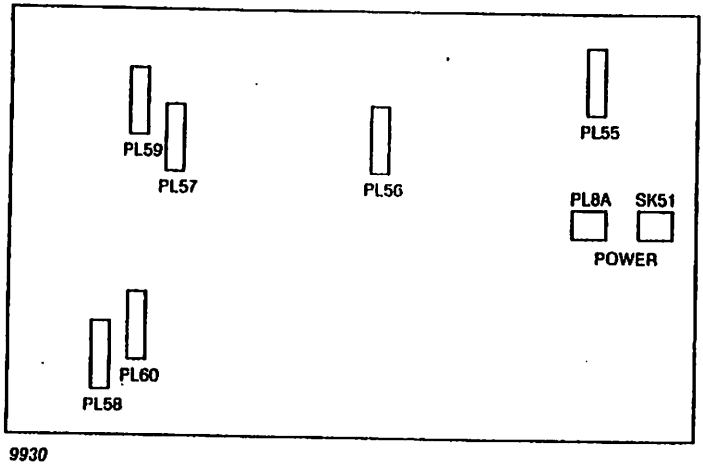


Figure D.3 Lower Backplane Sockets (Rear View)

Slot No.	Board
1	System Controller
2	Single Beam Computer
3	Single Beam Computer
4	Single Beam Computer
5	Single Beam Computer
6	Single Beam Computer
7	Single Beam Computer
8	PAX Comet Interface
*9	Spare (6X6)
*10	Spare (6X6)
*11	Spare (6X6)
12	Spare
13	Spare
14	Spare
15	Spare
16	Spare

Socket No.	Connection
PL55	Comet CPU Bus
PL56	Comp IC Data
PL57	Modulator Amp Bus
PL58	Not used
PL59	Input Function Data
PL60	Not used

Note: For Sirius 260 E/M:
*Slot 9 - Text Bus Controller Board
*Slot 10 - HRE Memory Board
*Slot 11 - EDG Bus Interface Board

D.2.2 Standalone Rack

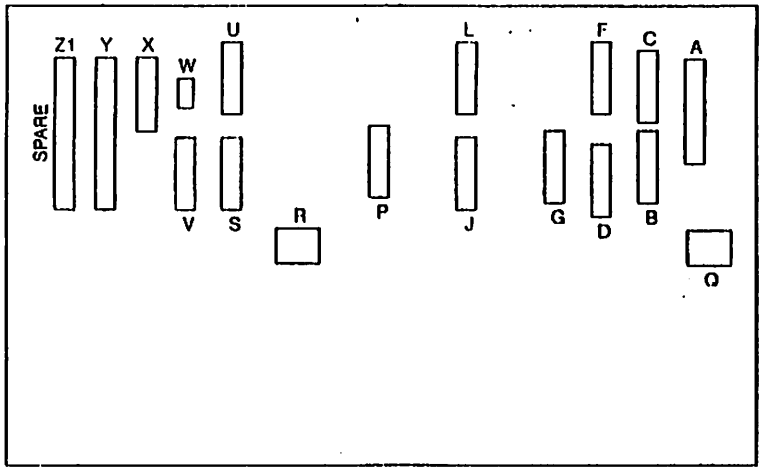


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Figure D.4 Top Rear View - Standalone Expose Backplane

Slot No.	Board	Socket No.	Connection
1	Spare	PLA	Servo Bus
2	Servo Controller	PLB	Test Expose Kybd.
3	OUC Controller Type B Assy	PLC	Comet CPU Bus
4	Extended Buffer (Optional)	PLD	OPPS O/P Bus
5	O/P DAC	PLF	MUX O/P Bus
6	O/P Line Store	PLG	Comp IC Data
7	Test	PLJ	OPPS I/P Bus
8	Test	PLK	-
9	ED Interface	PLL	MUX I/P Bus
10	Test	PLP	-
11	Phase Loop	PLS	Keyboard Bus
12	System Controller	PLT	-
13	Interface Controller	PLV	MUX O/P Bus
14	Resolution Convertor	PLW	Serial Command Link
15	Buffer I/O	PLX	Expose Bus
16	AD Interface	PLY	Image Bus
		PLZ1	Not used